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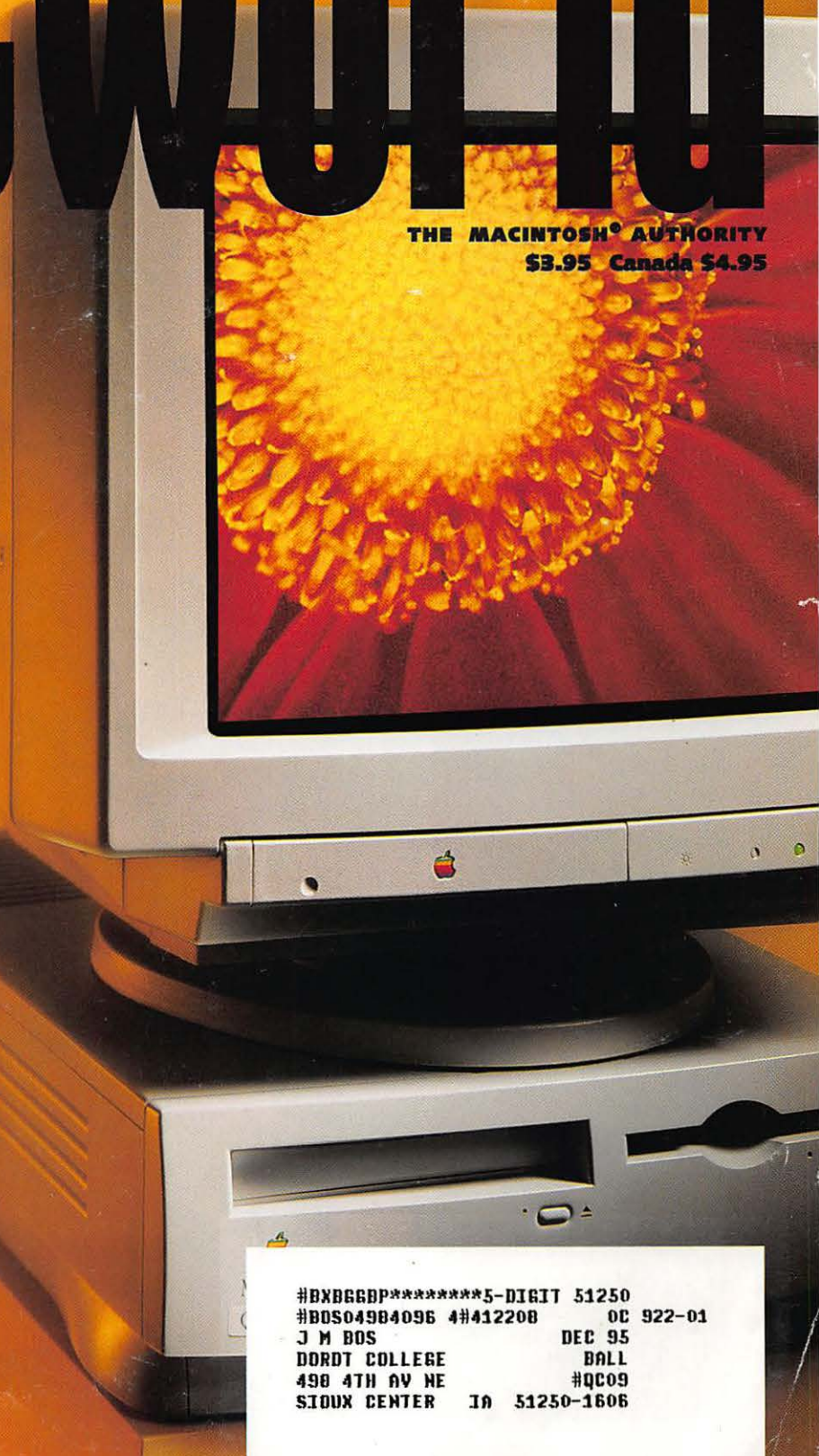
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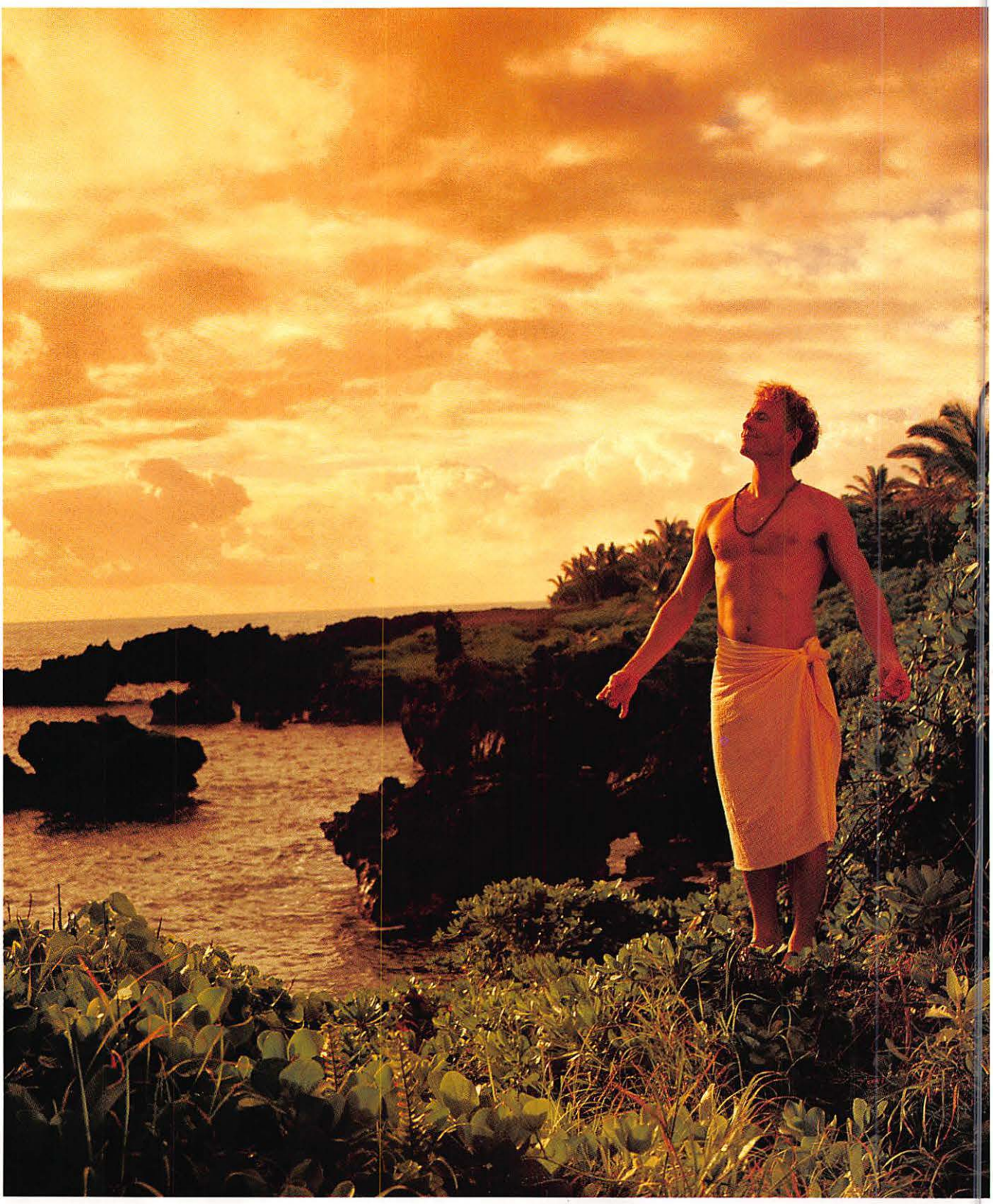
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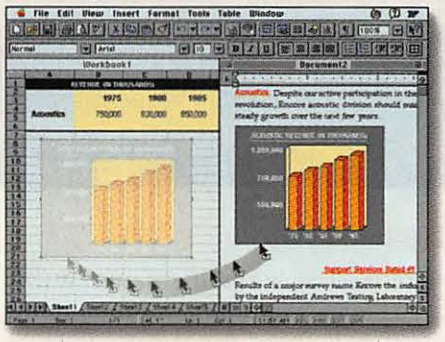
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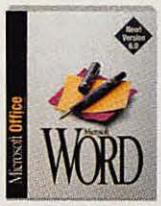
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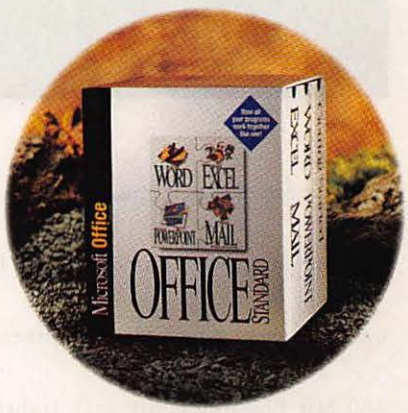
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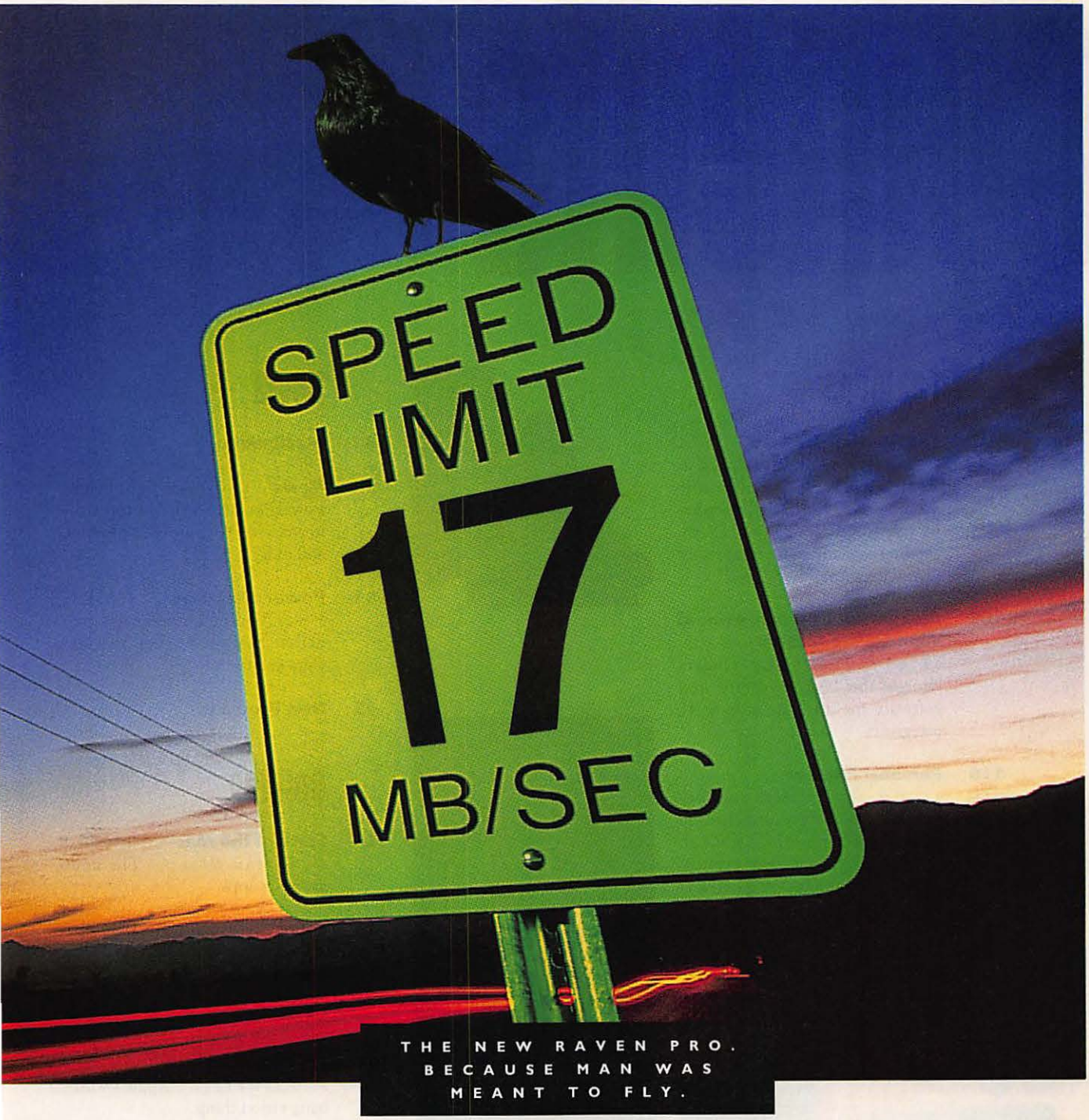
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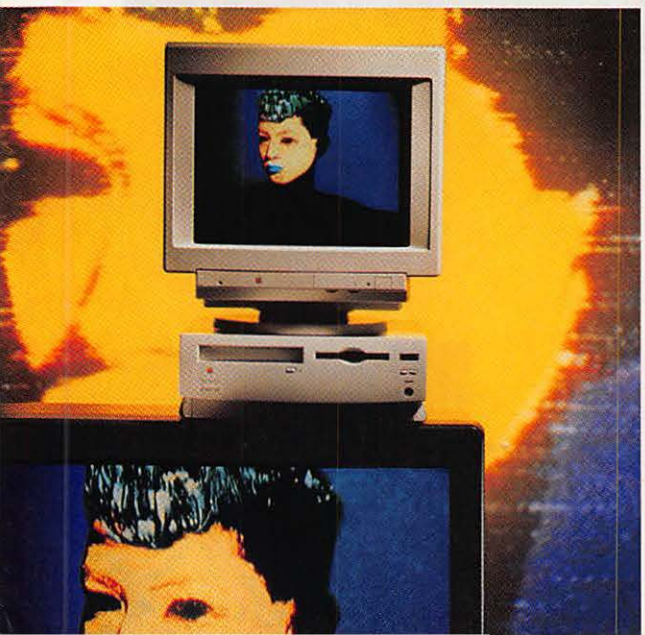
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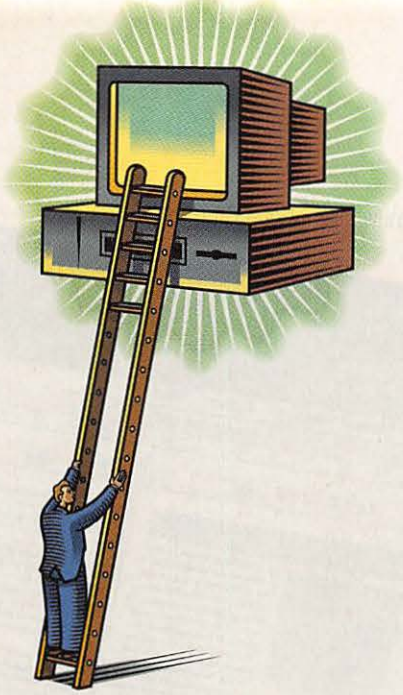
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Four new Apple® PowerBook computers that redefine, once again, what a notebook computer can be.

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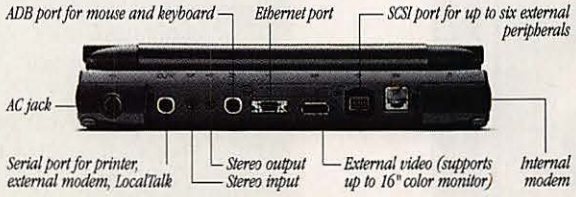
More power. The PowerBook 500 series is designed around the Motorola 68LC040 processor—a chip that offers far more power than the chips that powered previous PowerBook models.



The revolutionary new Apple trackpad makes pointing and clicking even more intuitive than before.

In benchmark tests, the new PowerBook 540c running at 66/33 MHz was 80% faster than the fastest previous PowerBook. (Its gray-scale counterpart, the 540, is equally fast.) And with the same chip running at 50/25 MHz, the 520 and 520c aren't far behind.

We've supported that processing power with 80% more memory capacity (up to 36MB), 56% more internal storage capacity (up to 320MB) and built-in high-performance Ethernet networking (as well as LocalTalk®).



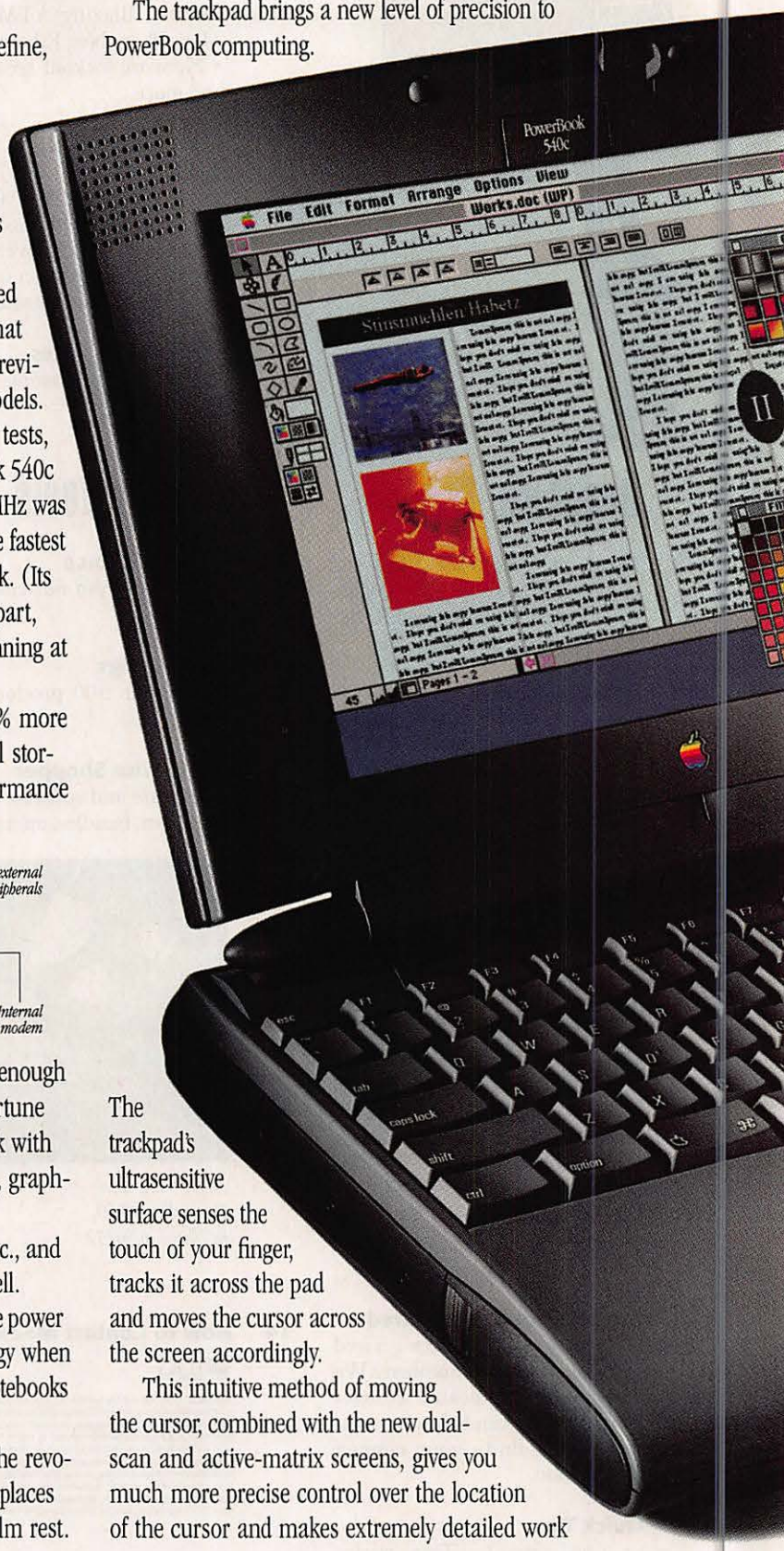
This makes the PowerBook 500 series powerful enough not only for word-processing long documents or Fortune 500-sized spreadsheets, but also for doing fieldwork with programs like Adobe Photoshop and other high-end, graphics-intensive programs.

Add SoftPC software from Insignia Solutions Inc., and you've got the ability to run MS-DOS programs as well.

The 500 series offers the possibility of even more power later, because you can upgrade to PowerPC™ technology when it's available for PowerBook. (Contrast this with 486 notebooks that aren't upgradable to Pentium technology.)

More precision. Kindly direct your attention to the revolutionary new Apple trackpad pointing device that replaces the trackball and is centered on the comfortable palm rest.

The trackpad brings a new level of precision to PowerBook computing.



The trackpad's ultrasensitive surface senses the touch of your finger, tracks it across the pad and moves the cursor across the screen accordingly.

This intuitive method of moving the cursor, combined with the new dual-scan and active-matrix screens, gives you much more precise control over the location of the cursor and makes extremely detailed work

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possible (it's actually precise enough for photo retouching) wherever you happen to be.

The PowerBook 540c has what may well be the finest screen ever to grace a notebook computer: an active-matrix, 9.5-inch display capable of showing thousands of colors at the same time. Combined with QuickTime® video and built-in stereo sound, these screens make for truly spectacular presentations in the most unspectacular locations: on a crowded plane, in a noisy diner, wherever.



These are the first PowerBook computers to use PCMCIA technology.

More expandability. The new PowerBook 500 series includes a lot of things that aren't standard on ordinary notebook computers.

Things like built-in file sharing and networking. Stereo sound and video-out. Macintosh PC Exchange™ software, eWorld™ and PowerBook File Assistant file-synchronizing software. And we've even included Apple Remote Access software that allows any modem-equipped PowerBook to work with the Macintosh® computer on your desk, and with your network, as if you were sitting in your office. Even during those times when your office happens to be thousands of miles away.

Still, there's a lot of room to grow. These are the first PowerBook computers to come with a built-in Processor Direct Slot (PDS) for third-party expansion modules. And they're also the first ones to offer the optional plug-in PowerBook PCMCIA Expansion Module, so you can use two Type II or one Type III PCMCIA card for even more flexibility.

You can even install an optional 19,200-baud internal modem to send and receive information quickly, and when it becomes available, a third-party cellular interface for convenient wireless access to your office network.

More battery life. Even the batteries have been thoughtfully redesigned. The PowerBook 500 series can use two PowerBook Intelligent Batteries. These high-powered NiMH batteries use special processors within each pack to monitor battery power and the new PowerBook Control Strip — power management software that tells you exactly how much time you have before you need to recharge the batteries.

	PowerBook 520	PowerBook 520c	PowerBook 540	PowerBook 540c
Processor	*Motorola 68LC040 @50/25 MHz*		*Motorola 68LC040 @66/33 MHz*	
Display	*FSTN Gray-Scale*	*Dual-Scan Color*	*Active-Matrix Gray-Scale*	*Active-Matrix Color*
Hard Drive	*160MB*	*160MB*	*240MB*	*320MB*
Memory	*4MB DRAM expandable to 36MB*			
Battery Life	*Up to 7 hours with 2 batteries*		*Up to 6 hours with 2 batteries*	
Audio	*16-bit stereo in and out, built-in stereo speakers and mono microphone*			

The result is 40% more battery life than before — up to seven hours per charge — when using both batteries.

They recharge faster, too — in as little as two hours for both batteries when the PowerBook is asleep or shut down. And the batteries even recharge while you're using the PowerBook.

More information. While this has been an abundance of information, by any standard, it can't serve as a substitute for a personal demonstration. Something that can be easily arranged at your authorized Apple reseller. To find the one nearest you, simply call 800-732-3131, ext. 100. (In Canada, call 800-665-2775, ext. 910.)

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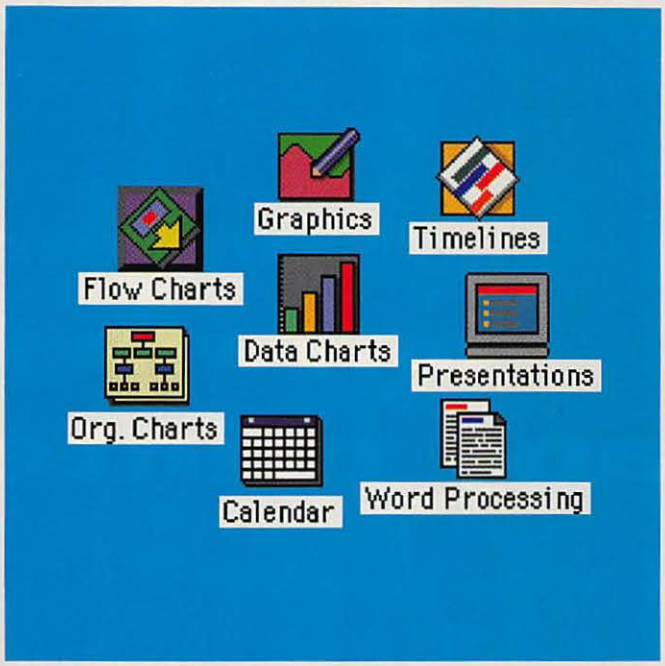
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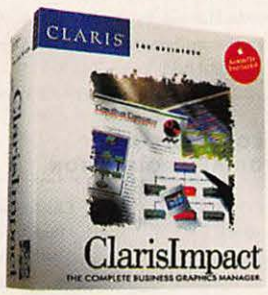
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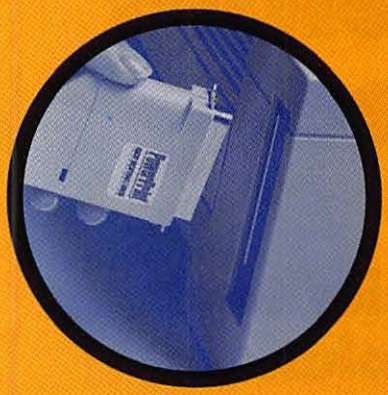
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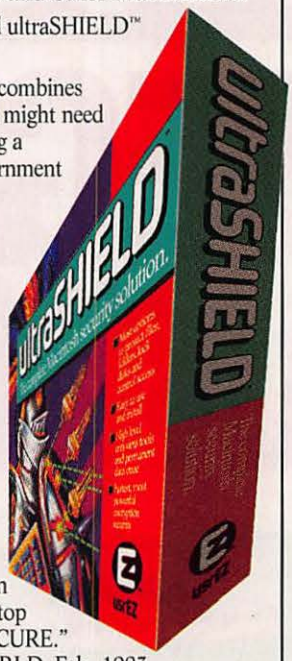
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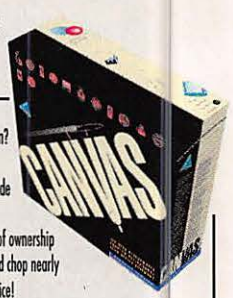
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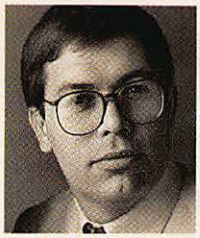
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Circle 57 on reader service card



BY ADRIAN MELLO

The Next Killer App

The search continues

EVER SINCE WORD PROCESSING and spreadsheets started driving computer sales, developers have been searching for the next killer app. What is a killer app? Many people now use the term to mean simply a software hit. But in the Macintosh world the phrase *killer app* has meant something much more ambitious. It describes an innovative product or product class that redefines what computers can do and creates major new markets that fuel the engine of success.

In most respects, the Mac has thrived because it has inspired innovative applications. To ensure its continued success, the Mac must offer new capabilities that distinguish it from the hordes of Windows PCs. It's not enough to offer competitive performance at a reasonable price. What the Mac needs is another killer app.

Of course, dreaming up the next killer app is anything but easy. Otherwise, everyone would have done it by now. Every developer in the personal computer business would love to cook up the product that creates the next major market windfall. They dream about it in their sleep. This explains the phantasmagoria of knowledge navigators, voice recognition, personal digital assistants, the information superhighway, and to some extent, multimedia.

I confess that I don't know what the next killer app is any more than the quixotic marketeers and developers who pursue those dreams do. My guess is that Apple doesn't know either. But maybe Apple doesn't have to. Maybe it just needs to figure out how to create the conditions from which the next killer app will arise. Perhaps we can figure out what those conditions are by looking for lessons in past successes and failures.

The First Killer Mac App

To a great extent the Mac's success has been linked to desktop publishing—a genuine killer app because it created a whole new industry, going far beyond the mere replacement of typewriters, files, and balance sheets. It's not that productivity software such as word processors, database managers, spreadsheets, and accounting programs weren't important—to this day they represent the lion's share of software use. It's just that the Macintosh needed to be unique to give people a compelling reason to buy it instead of the already well entrenched PC platform. The introduction of page-layout programs and PostScript laser printers on the Mac platform revolutionized the publishing market and remade it in the Macintosh mold.

So why did desktop publishing first arise on the Macintosh? The graphics architecture that is the foundation of the Mac's design made the Mac uniquely suited for manipulating text and imagery. To this day, the Macintosh is still superior as a platform for desktop publishing despite the fact that Windows PCs now support this application with many of the same software titles and hardware products. That might explain why most designers and production managers who use desktop publishing systems continue to choose the Macintosh. In any case, the lesson to be learned here is that by making key enabling technologies part of a computer system's architecture, the system vendor lays the foundation for innovative applications.



GLENN MITSUI/STUDIO MD

Wannabe Killer Apps

Have there been any other killer apps? Over the years, the marketing wizards at Apple and other companies have promoted new technology on the basis that it was "the next desktop publishing." You could tell what was supposed to be the next killer app because it was always preceded by the word *desktop*.

After desktop publishing came desktop presentations, heralded by the introduction of slide-layout packages such as Microsoft PowerPoint, which were accompanied by desktop film recorders. This candidate killer app was supposed to parallel the one-two software/hardware punch of page-layout software and PostScript laser printers. The movement to desktop presentation was smart because it leveraged technologies similar to those that caused desktop publishing to succeed.

But there were a couple of important differences that stopped desktop presentations from reaching killer status. Few people were willing to fuss with desktop film recorders (although LCD projectors have met with some success). Presentation packages are popular, but most of those who use them are presenters only part of the time. The lesson here is that a killer app must help a large group of people do the core functions of their jobs.

Multimeaninga

Next on the list of wannabe killer apps has to be multimedia. The jury is still out on this one, but it's fairly obvious that no killer app has emerged in the few years multimedia has been touted. Why? The main reason is that multimedia describes a set of intersecting technologies, but everyone talks about multimedia as if it were a single cohesive application—which is just confusing. I think the reason it is promoted as a single application is that

continues

everyone would love to think they've got a line on the next killer app.

Video production, multimedia presentations, multimedia training, and CD-ROM titles are often considered multimedia apps. Yet none have developed into a killer app. While you can certainly do some interesting things with video on a Mac, the system is not yet powerful enough to take the video-production market by storm. At any rate, video is a smaller market than print publishing. Multimedia presentations constitute a legitimate market but one that's still quite small. Multimedia training makes more sense as a potential killer app, but training as a whole remains undervalued by companies and organizations.

CD-ROM titles are an entirely different beast. As more compelling titles become available and as more CD-ROM drives are installed, CD-ROM publishing may become a successful business. But CD-ROM titles are a distribution medium covering eclectic interests—not a cohesive application. The lesson of the multimedia experience is not to mistake an enabling technology for an application.

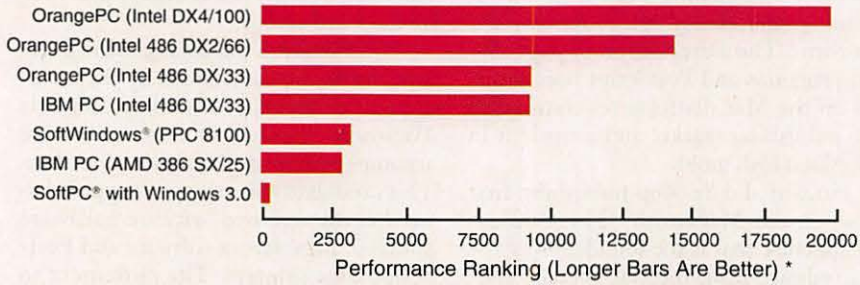
The Basis of Innovation

What do these few lessons tell us? Apple may or may not be able to develop the next killer app on its own, but the company can do a lot to create the conditions that bring it to fruition. Apple needs to develop the most promising enabling technologies and incorporate them into the Mac platform. In a way it's harder to do this now because Apple can't reinvent the Mac from the ground up; however, by migrating to a RISC architecture and a fully object-oriented operating system, Apple is laying the groundwork for the most flexible personal computer possible. The real significance of the Power Mac will depend on what other enabling technologies Apple builds on top of it.

How should Apple choose which new technologies to add to the mix? It should go for those that support a range of activities central to the work of a large group of people. These technologies should go beyond whizzy new features like voice recognition and stereo sound, and help change the way a class of workers gets their job done. Along the way, Apple must remain clear about the distinction between technology and applications and should avoid marketing technology instead of solutions. Based on some recent talks I had with decision-makers at Apple, the company appears ready to focus on providing solutions to problems that key markets have. Apple must also listen more closely to its developers to get an understanding of what they need if they are going to satisfy their customers.

Assuming Apple creates the proper technological basis for the next killer app, the company must encourage developers to commit resources to the quest. Developers must perceive real opportunities and have exceptional support to justify committing resources at a time when they are operating under smaller margins and shorter development times. According to a number of developers, Apple has done a good job of providing technical guidance for building Power Mac applications. But it has not done such a good job of having all the tools ready. At this crucial time, Apple must do an extraordinary job of balancing what developers want and what the platform needs, to grow in a way that provides unique cachet. Whatever new capabilities Apple gives the Mac, they must be remarkable enough to capture the imaginations of new customers and revitalize the aspirations of existing Macintosh users. **m**

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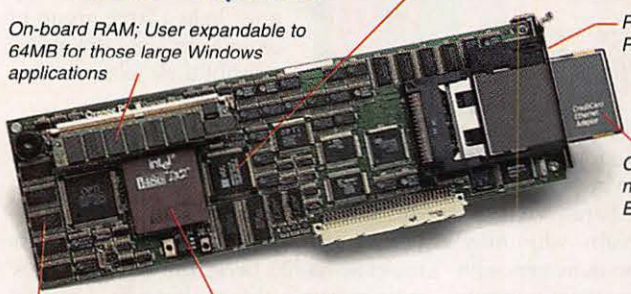
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* Benchmark results are based on the Processor Harmonic measurements from PC Bench version 7.01. SoftPC with Windows was run on a Quadra 700. SoftWindows was run on a Power Macintosh 8100.
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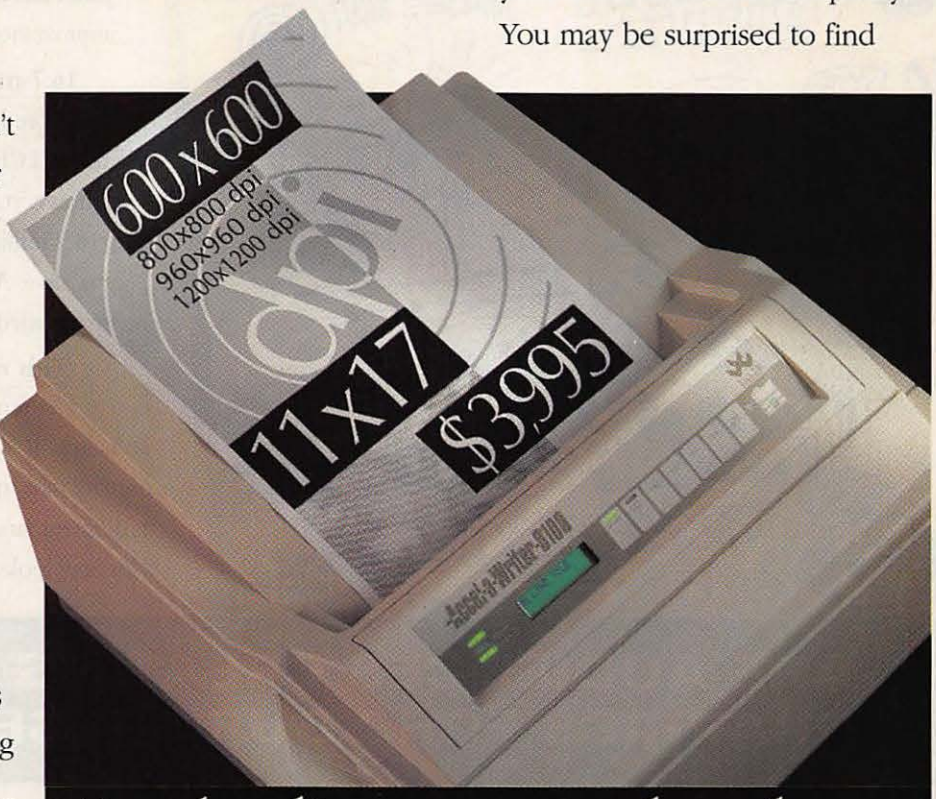
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Letters

Classic Blues

ADRIAN MELLO WAS RIGHT TO lament the disappearance of the original Mac box (*State of the Mac*, June 1994). Its passing is indeed a somber subject. However, when he calls for a new Classic, he asks all the right questions but fails to see the answer in front of him. The new Classic must (1) have a small footprint; (2) be fast; (3) have decent expandability; and (4) have a strong visual identity. Mello may not realize it, but he is talking about the PowerBook.

Joe Freeman
via the Internet

NOT ONLY HAS APPLE REMOVED THE Classic, but the company is doing the one thing I never thought I'd see it do: confuse users with complex choices! Wasn't Apple supposed to be the easy-to-use company? How many Macintosh lines have been introduced up to this date? Let's see . . . there's the Lisa, Plus, SE, SE/30, at least seven II-series models, the Classic, Centris, PowerBook, Duo, Quadra, Performa, and now Power Mac. Even I start to get a little Apple-dizzy when we add in the Newton (also upgraded, to the MessagePad 110); the Mac TV (where did *that* come from?); and the AV systems. Can you imagine Macintosh users giving up on Apple and switching to Compaq or Dell because they are easier to deal with or offer simpler packages? I'll rue the day, but I see it coming.

Matt Leavitt
Derry, New Hampshire

I FOUND ADRIAN MELLO'S VIEW ON Apple's revamping of the lost Macintosh Color Classic interesting. But as the owner of a pathetic few hundred dollars' worth of Apple stock, I'm not sure I really want to see the company risking its profit margin on a computer that would be cool but, by definition, limited.

Here's a different angle on the Classic, for die-hard Mac lovers: Apple could



WARD SCHUMAKER

simply release the Classic case with the interior gutted and the monitor replaced with a handy little 9-inch fishbowl. Bundles would be available—the complete Macquarium could come with a certificate for free guppies redeemable at Pets-R-Us, or possibly include a packet of dried sea monkeys. Every Mac fan could have one on their desk—a perfect reminder that Apple has always been nothing if not original. And at, say, 50 bucks a pop, I'll bet sales would go swimmingly.

Nick Appleby
via America Online

MR. MELLO MAY LOVE THE CLASSIC, but there are also those who still have a soft spot in their hearts for the Edsel. Some of us appreciate a Classic for what it is: a thing from the past, which is where it should remain.

Jeff Greenlee and Mark Jaress
via America Online

The Sound of Glass Breaking

I ENJOY YOUR MAGAZINE BUT WAS most disappointed in the article "Are You Breaking the Law?" (May 1994). It was good in the areas it covered, but what about sounds? I make my living creating custom sound effects and music, and it annoys me to no end to see bulletin boards freely distributing zillions of illegally copied audio samples. Programmers' rights are protected, and visual artists' rights are protected, but sound and music seem to be considered common property by bulletin boards that would never allow copyrighted programs or art to be downloaded for free.

Doug Blackley
via the Internet

We did mention audio in our article but chose not to cover it in depth because the issues, while similar in some ways, differ significantly from those related to images.—Ed.

Font Follies

I WAS INTERESTED TO READ DAVID C. Rakowski's letter in which he claims that although he released his fonts as freeware he retained the copyright (June 1994).

The legislative history of the Federal Copyright Law indicates that Congress deliberately declined to provide copyright protection for typefaces. Since then, the Copyright Office has refused to accept registration for typefaces, and the courts have upheld this decision.

Courtney Bailey
San Francisco, California

Copyright protection for digital typefaces is a complex subject. Briefly, U.S. courts have routinely interpreted typefaces to be industrial designs, and copyright law does not protect industrial design. However, some typefaces have been protected with design *patents*—among them ITC Stone, Adobe Garamond, and Adobe Minion.

But while its *design* isn't copyrightable, a digital typeface is a software program and can receive copyright protection as such. In other words, you can't take another vendor's font software and resell

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CORRECTIONS

- *The correct telephone number for Now What Software, maker of Small Blue Planet* (Reviews, *July 1994*), *is 415/885-1689.*
- *In July's* State of the Mac *("Grading the Latest Macs"), the PowerBook 540c was incorrectly identified as the 580c.*
- *The correct voice number for Interex is 316/524-4747* (MacBulletin, *June 1994*).
- *Since our July 1994 feature "PowerBooks: The Next Generation," Apple's Duo upgrade policy has changed. Apple will offer an upgrade to the Duo 280 for the Duo 250, and the Duo 270c can be upgraded to the Duo 280c. No upgrades are currently available for the Duo 210 and 230. In the future, Apple will offer a direct PowerPC upgrade for all Duos.*
- *Also in the July PowerBook feature, the infographic "The Pull-Apart PowerBook" incorrectly implied that users could install or upgrade the keyboard, hard drive, RAM, CPU, modem, and SuperDrive of their 500-series PowerBook. According to new information from Apple, if you are not an Apple-authorized technician, performing these operations voids your warranty.*
- *The correct phone numbers for Vision's Edge are 904/386-4573, 800/983-6337, and (fax) 904/386-2594* (New Products, *August 1994*).
- *The NuDesign Engineering Color Printer should have received an "acceptable" tech-support rating ("Color Printers for Every Budget," August 1994).*

it as your own, or make unauthorized copies. As a result, Mr. Rakowski does have the right to retain whatever copyright protection is available to any software program he has created.—Ed.

DOS Card Review

I FOUND YOUR REVIEW OF THE DOS Compatible Card to be a bit foppish (*Reviews*, June 1994). The card was easy to install on my Centris 610, and it performed as promised. Printing to my LaserWriter is now effortless from either operating system, and I no longer have to spend countless hours fine-tuning my DOS machine to accept modems, mice, graphics cards, and printers.

Many Macintosh users need DOS/Windows compatibility so they can occasionally use some odd, proprietary program. I think Apple should be commended, not lambasted, for a solid effort to keep us in the fold. The DOS Compatible Card may have a limited audience, but it's a sensible, cost-effective product that delivers.

G. D. Rothenberg
Richmond, Virginia

The DOS Compatible Card may have delivered, but Apple no longer delivers the DOS Compatible Card: the company discontinued the card early this summer.—Ed.

Future OS

IT'S INTERESTING TO NOTE THAT even though Apple now makes the personal computer with possibly the fastest processor, it doesn't have an operating system to match the CPU's capabilities ("Apple Tells Its Software Future," *News*, June 1994). In some ways, the situation is like the one that exists for PC-compatibles, in that most users are running DOS on the latest Intel processors.

If a true multitasking Macintosh Operating System will not be forthcoming until 1996, it may keep potential Mac converts from crossing the line. Once you've tasted a true multitasking OS, you notice the difference.

Peter Chant
Port Coquitlam, British Columbia, Canada

Purchasing Tip

WHEN IT BECAME NECESSARY TO replace my aging Mac, I sought prices on a new system from the many mail-order houses advertised in *Macworld*. The prices were all over the place—some were in line with the quote I received from a local dealer, but others were thousands of dollars less.

If this happens to you, ask a vendor promising an incredibly low price to fax a confirmation of the quote. (If you do not have a fax machine, it is worth a trip to a store where you can pay to receive a fax.) When I asked for faxed confirmation, the mail-order vendor apologized, said that the order taker had underquoted the system price, and quoted me a new price that made my local dealer's offer look very attractive.

J. W. P. Barnes
Macon, Georgia

Whether you make your purchases by mail or from a local dealer, insisting on a written quote helps eliminate the confusion that can occur when you buy something as complex as a complete computer system. With a quoted price in hand, both sides

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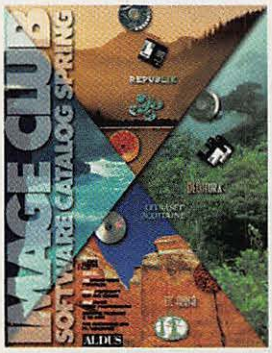
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can verify what has been ordered and how much it will cost.—Ed.

Battery Clarifications

IN THE "HOW LONG DO BATTERIES Last?" chart in your June article "PowerBook Power Management," when cycling is turned on it makes the battery wear down faster, and when the hard drive is set to never spin it has no effect on the battery. However, you recommend turning on processor cycling and letting the hard drive spin down. Which of these is correct? It seems that if the former were correct, then you wouldn't want to do the latter. Your help is greatly appreciated.

Frank Malinowski
via CompuServe

Several of the entries in the Processor Cycling column in the "How Long Do Batteries Last?" chart were accidentally reversed. All of the entries under the Optimum Conservation and Run-Down Battery Test headings should have read *on* in the Processor Cycling column, except for the processor cycling test, where we turned the cycling *off* (also, the title of that row should have read "with Processor Cycling off").

As for whether or not you should let your hard drive spin down, that depends on how often you access your disk, as we said in the text of the article. If you can spin down your hard drive and let it sit, your battery will last longer. If you are constantly firing up and shutting down your hard drive, the power drain required to bring the drive up to speed will offset any idle-time savings.—Ed.

Nomenclature

NOW THAT THE APPLE POWER Macs have arrived, I see a dilemma on the horizon. What will Apple name a PowerPC-based PowerBook? An Apple Power PowerBook? And if so, should an informative document on the subject be called a Power PowerBook book?

Bob Harshbarger
Green River, Wyoming

Look for the answers to these and other questions in a future issue of *Power PowerMacworld World*.—Ed.

Letters should be sent to *Letters, Macworld*, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically, to CompuServe (70370,702), MCI Mail (294-8078), America Online (Macworld), eWorld (Macworld), AppleLink (Macworld1), or via Internet (letters@macworld.com). Include return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*. m

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SEE US AT MACWORLD EXPO BOOTH #5462

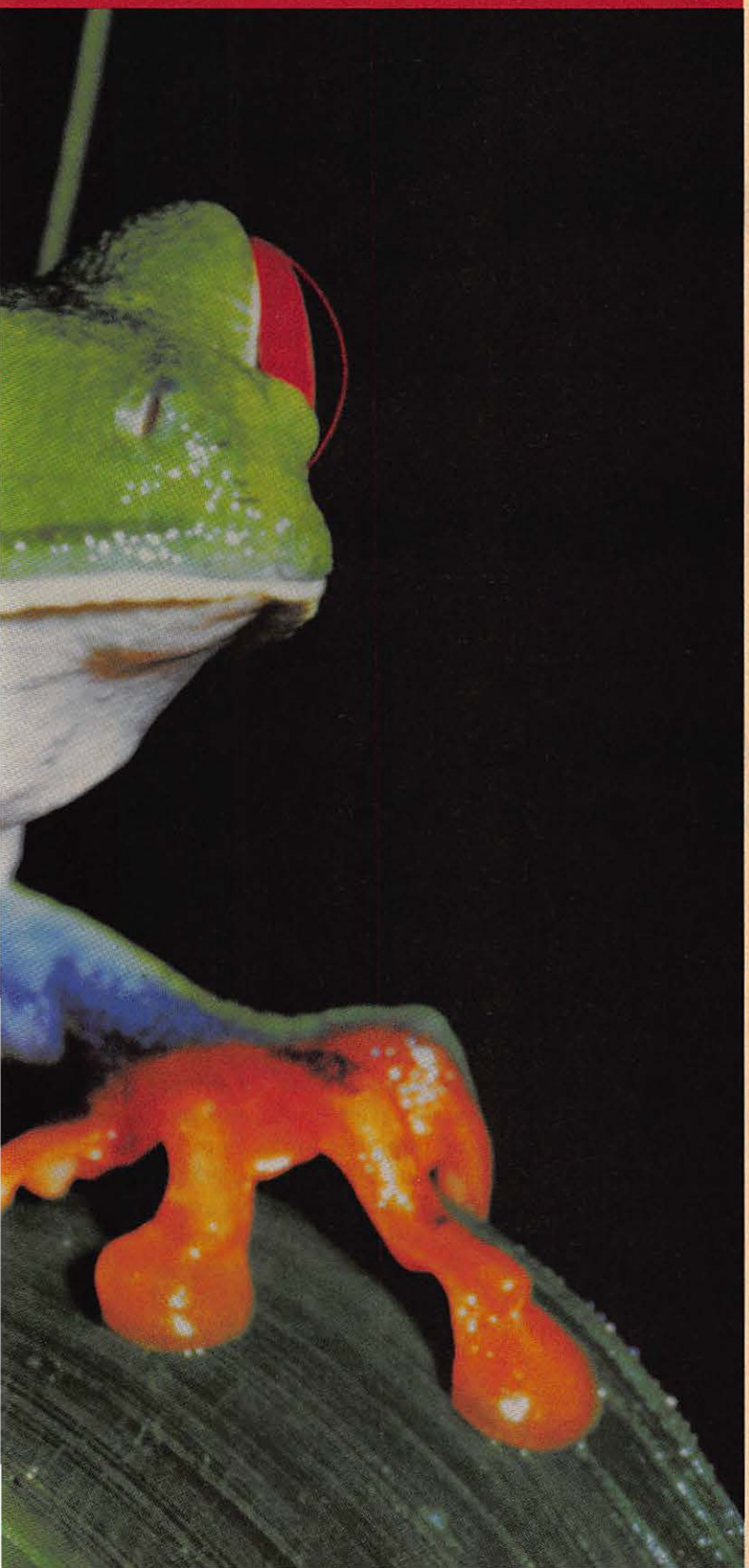
The detail of EPSON's 4800 dpi, scanner really stands



Actual 30-bit scan

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To ensure the best results with any image you scan, the ES-1200C provides one and three pass scanning, and standard parallel and SCSI ports allow you to connect simultaneously to a Mac and a PC—an EPSON exclusive. All this means the ES-1200C gives you more power than anything else in its price range.



The ES-1200C Pro for Mac. The highest detail of any personal scanner.

The ES-1200C Pro includes top-ranked Adobe Photoshop, Kai's Power Tools, ScanTastic plug-in module & desk accessory and a SCSI cable. There's also a PC version.

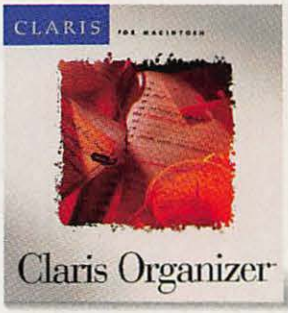
Feature	EPSON ES-1200C Pro	HP ScanJet IICX	Microtek II HR	Umax UC1260
Optical Resolution	600	400	600	600
Max Resolution	4800	1600	2400	2400
Bits Per Pixel	10	8	8	8
One & Three Pass	yes	no	no	no
Dual Connectivity	yes	no	no	no

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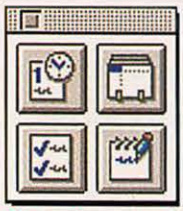
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Claris Organizer. The first P.I.M. that's got it all together.

If you've tried to use your computer to get organized, you know that most personal information managers (PIMs) do one or two things well. But the things they do, aren't well integrated. Until now.

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SEE US AT MACWORLD EXPO BOOTH #5462

LATE-BREAKING NEWS

MacBulletin

DOS-Compatible Born Again? Apple demonstrated a working prototype PC coprocessor card for the Power Macs at the PC Expo on July 27 but said it was not yet announcing a product. However, in November 1993 Apple unveiled a similar prototype that five months later shipped as the now-discontinued DOS Compatible Card for the Centris and Quadra 610. The latest prototype uses a 50MHz 486DX2 CPU, which is about 1.5 times as fast as the CPU in the DOS Compatible Card.

PowerPC Upgrades for Mac II Line Apple recently gave DayStar Digital the exclusive right to include Apple's Power Mac ROM code on DayStar Power Mac upgrade boards for selected Mac II models. DayStar expects to make upgrades for the Mac IIci, IIvi, IIvx, IIfx, the Performa 600, and possibly the IIsi. The company hopes to ship by Macworld Expo in January. Prices were not set at press time. DayStar, 404/967-2077.

Macintosh PC Exchange 2.0 Ships The latest version of Apple's Macintosh PC Exchange can open, save, move, copy, rename, and delete files in any DOS disk format. When saving a Mac file to a DOS disk, the new version gives the Mac file a name that's compatible with the limited file-naming capability of DOS. The $79 program will be distributed free with System 7.5. Current owners can upgrade for $35 through resellers and from Apple at 800/769-2775.

Graphics Contender xRes, a paint and image-editing program from Fauve Software due in late summer, has most of Adobe Photoshop's editing tools and special effects plus Fractal Design Painter's natural-media tools. And because it represents images mathematically on layers, xRes lets you work quickly on very large, high-res files while using minimal memory. Layers and undos are unlimited. $799. 919/388-9933.

PCMCIA Drive for PowerBooks Epson America has introduced a PCMCIA-based 170MB hard drive that will work in PowerBook 500–series notebooks equipped with Apple's optional PCMCIA adapter. The $629 drive-on-a-card requires no special drivers for Mac compatibility. 310/782-0770.

Ergonomic Radius Monitor Radius is shipping its first 20-inch, Energy Star–compliant color monitor, the IntelliColor Display/20e (ICD/20e). Supporting resolutions up to 1600 by 1200 pixels, the $2399 monitor can change bit depth or resolution on the fly. It includes a new version of the company's IntelliColor software that gives digital control of any on-screen aspect, according to Radius. The ICD/20e complies with Swedish MPR II guidelines for reduced magnetic-field emissions. 408/434-1010.

Now Utilities 5.0 Expected to ship in September for around $89, Now Software's major upgrade features two brand-new components: Now QuickFiler, a file manager and compressor with searching and synchronization; and Now FolderMenus, which pops up a hierarchical menu of a folder's or volume's contents when you click and hold on a desktop icon. Version 5.0 includes native Power Mac code and takes advantage of Apple's System 7.5—particularly the revamped Now Menus, which can create draggable custom menus in the menu bar. 503/274-2800.

ClarisDraw Ships First announced about a year ago, ClarisDraw 1.0 ($399), a cross-platform application offering linked, intelligent drawing tools, is now shipping. MacDraw Pro users can upgrade for $89 (or $29 if they purchased MacDraw Pro after June 1, 1993). Users of MacDraw II or other competitive programs can switch to ClarisDraw for $99. Upgrade prices are good until at least November 30. 408/727-8227. m

News

EDITED BY TOM MORAN

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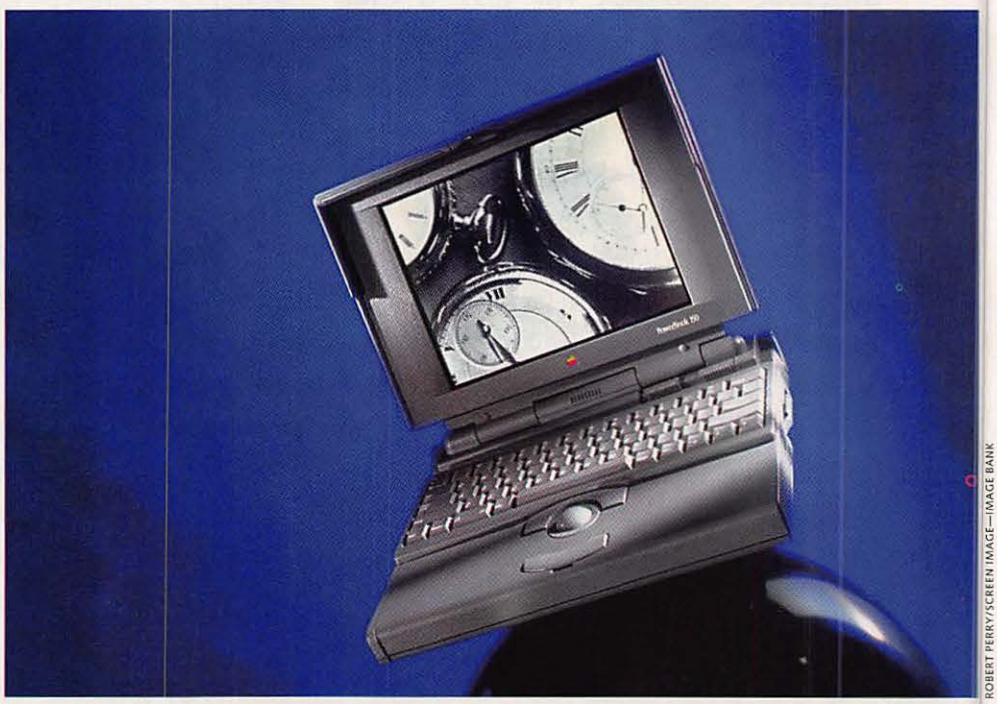
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Lighter Low-Cost PowerBook

Apple's latest and lowest-cost portable, the PowerBook 150, is lighter than its all-in-one predecessors and adds a larger screen, more expansion capability, and a passel of built-in software. The 150 replaces the current low-end PowerBook 145B. Unlike the PowerBook 500 series, the PowerBook 150 does not use a trackpad as a pointing device, instead sticking with the same trackball as earlier all-in-one PowerBooks.

The new PowerBook comes with considerable software installed on its hard drive, including System 7.1.X; ClarisWorks 2.1; and the PowerBook Mobility Bundle, which includes ARA, eWorld, the Control Strip and PowerBook Control Panel (both for power management), PC Exchange and DataViz's MacLink Plus Easy Open Translators for exchanging and translating files for DOS and Windows machines, File Assistant, Launcher, a HyperCard player, a calendar DA, and backup utility software. Luckily the only configuration of the PowerBook 150 comes with a 120MB hard drive (and 4MB of RAM, expandable to 40MB).



ROBERT PERRY/SCREEN IMAGE—IMAGE BANK

Apple's latest portable, the PowerBook 150, weighs about a pound less than previous all-in-one models but still uses a 68030 processor (see the benchmarks, "PowerBook 150: How Fast Is It?," on page 34).

For the first time, the internal hard drive is an IDE (Integrated Device Electronics) drive, not a SCSI drive. IDE is one of several standards used on the DOS and Windows side, and drives using it tend to be less expensive. Apple is including a SCSI port on the 150, so users will still be able to attach their existing external SCSI peripherals.

Apple managed to drop about a pound from the weight of the previous all-in-one PowerBooks: the 150 tips the scales at about 5½ pounds. The company used a lighter, manual-insertion SuperDrive floppy drive; the improved screen is also lighter; and the designers employed the internal architecture of the Duo 230, which means there are generally fewer components

and no need for the daughtercard used in previous all-in-one PowerBooks. To expand the memory of the 150, users will need the same kind of SIMM as for the Duo 230; otherwise, all accessories are the same as for the original all-in-one PowerBooks, including the NiCad batteries.

Apple expects internal fax modems to be available for the 150 from Global Village, PSI, and Supra. The PowerBook 150 has a serial port and built-in LocalTalk but does not include an ADB port (for an external keyboard or mouse), nor does it offer a video-out port for connecting to an external monitor. The 150's backlit, supertwist, passive LCD screen measures 9½ inches diagonally and displays 4 grays at 640-by-480-dot resolution, or 16 grays at 640 by 400 dots.

The PowerBook 150 includes a 33MHz 68030, so it's not the fastest portable Apple offers (see the benchmarks, on page 34). But at an estimated street price of $1449 the 150 should attract a lot of attention from value-conscious buyers. At press time Apple said it expected to begin shipping the PowerBook 150 in mid-July.—T.M.

The Latest Color Lasers

QMS AND XEROX OFFER BUSINESS COLOR CHOICES

Who needs color? Just imagine life with monochrome monitors, even in today's business environment. The color revolution that happened on the screen is starting to happen at the printer—color is coming to a workgroup laser printer near you.

The QMS magicolor Laser Printer is a true 600-by-600-dpi color laser printer that sends out black-and-white pages at 8 ppm and color pages at 2 ppm; the printer handles up to legal size (8½-by-14-inch) paper or transparencies but can only print in color within the letter-size portion of a legal-size sheet. The magicolor has simultaneously active serial, Centronics, and LocalTalk ports (built-in), as well as a slot that accepts a multiprotocol Ethernet or Token Ring CrownNet interface card. The magicolor supports PostScript Level 2, PCL 5, and HPGL/2; and the printer comes with 65 resident typefaces, as well as a standard 80MB internal hard drive—a 120MB internal drive is available as an option.



SCOTT PETERSON

The Xerox 4900 Color Laser Printer produces 12 monochrome pages or 3 color pages per minute.

QMS sells its color laser printer in two configurations: the 12MB version lists for $9999 and provides 600-by-600-dpi monochrome resolution and 300-by-300-dpi color resolution; the 28MB version lists for $10,999 and provides 600-by-600-dpi resolution for both color and monochrome. Users can expand the magicolor's memory to a maximum of 64MB.

With its 4900 Color Laser Printer, Xerox has taken a slightly different approach. Xerox's entry prints at a maximum of 1200 (horizontal) by 300 (vertical) dpi, at 12 ppm in monochrome and 3 ppm in color. Like the magicolor, the Xerox 4900 has simultaneously active serial, Centronics, and LocalTalk interfaces; and the printer speaks PostScript Level 2, PCL 5, and HPGL/2. Ethernet cards are available for EtherTalk and NetWare, and a Token Ring card is also available for NetWare. The Xerox 4900 handles up to legal-size paper or transparencies and ships with 35 PostScript fonts, 13 Intellifonts, and 7 bitmapped fonts resident. The printer comes with 12MB of RAM, upgradable to 48MB. Users can also add a Media Server option, which enables the printer to print DOS-formatted PostScript and PCL files directly from an internal 3½-inch floppy disk drive. The Xerox 4900 includes Xerox's Printer Services application, with which a user can monitor and configure the printer. Among other functions, the app displays the status of consumables such as toner and maintenance items such as the print belt and toner waste box and, when multiple paper trays are installed, identifies which tray holds which media type. The Xerox 4900 Color Laser Printer is shipping now at a list price of $8495. QMS, 205/633-4300; Xerox, 800/275-9376.

—CAMERON CROTTY

Pentium Ad Done on a Mac!

IGNORE THAT MAC BEHIND THE CURTAIN

That swooping, screaming-fast jetlike Pentium chip you've seen animated in one of Intel's ads—the ones that imply you don't need a Mac—was rendered on a Quadra 950. According to sources close to the project, as part of Intel's $150 million campaign to maintain mindshare in the face of the PowerPC threat, Intel hired an outside group to oversee production of the ad. That group hired a subcontractor, an extremely well known animation facility that does not own any DOS or Windows machines, the sources said. Due to the press of business, the company

continues

In Brief

T/Maker Acquired

Saying it needed a strong partner, T/Maker Associates announced it would be bought by billion-dollar check-printing company Deluxe Corporation, which also has a greeting-card and gift-wrap division. The T/Maker principals are expected to remain at the company, which has changed its focus somewhat in recent years to concentrate on clip art (in its ClickArt line) and children's multimedia software on CD-ROM. The company no longer owns its longtime mainstay, the word processing program WriteNow.

68060 Delay

DayStar's 68060-based accelerator boards, originally due to ship in May, have been delayed until September at the earliest. DayStar's 66MHz and 80MHz PowerPro PowerPC accelerator boards for several Quadra models are now shipping, about two months after originally planned. PowerPro boards for LC III–style Macs and for II-series Macs are under development, as previously announced; but DayStar has not committed to shipping boards for every model, citing various development and market concerns. 404/967-4077.

SyQuest Cuts Cartridge Costs

SyQuest has dropped prices for several of its removable hard disk cartridges for various SyQuest drives. The 88MB 5¼-inch removable cartridge's expected street price is down to $69 from about $88. The street price of SyQuest's 200MB 5¼-inch cartridge was reduced to $79, versus a street price of about $90 previously. The street price of a 270MB 3½-inch cartridge fell to about $59 from a range of $70 to $75. SyQuest says it cut its cartridge prices to compete more effectively with magneto-optical drives. 800/245-2278.

could not use its high-end Silicon Graphics workstations for the entire project and turned to its group of Macintoshes to meet its deadline. The animation and special-effects company had previously bought Macs because it prefers them and because, at the time, Photoshop was not available for DOS or Windows systems. The sequences of the flying chip and three moving computer screens were produced using Electric Image software.—T.M.

Symantec Revs Norton, SAM

UNIFIED INTERFACE

When Neil Young said, "Rust never sleeps," he could have been talking about your Macintosh. To combat the entropy attacking your Mac, Symantec has released newly updated versions of both its Symantec AntiVirus for Macintosh (SAM) and its Norton Utilities for the Macintosh (NUM).

The company has tweaked nearly every piece of NUM 3.0, including the package's approach to repair and maintenance. FileSaver, which previously passively tracked files and volumes to improve your chances of recovery in case of a problem, now actively scans for file fragmentation and corruption.



The latest Norton Disk Doctor is faster and scans more areas of a disk.

FileSaver reminds you when it's time to back up or defragment your drive, and it notifies you when it detects a file or volume problem developing that needs more intense attention. You can launch Norton Disk Doctor (NDD) directly from the FileSaver control panel, and the faster and more capable NDD can now scan for and repair bad blocks and examine more areas of the disk. Less critical, but certainly more convenient, NDD also has an improved Rebuild Desktop feature—you can now update a single icon without having to rebuild your entire desktop.

Part of proactive troubleshooting is knowing more about your Mac; toward that end, NUM now includes a System Info utility, which lists the key system parameters, including CPU, RAM, and all currently installed extensions. System Info can also run a series of benchmark-style tests on your Macintosh, in either Power Mac or emulation mode. Symantec ships NUM with a set of comparative ratings so that you can see how your favorite machine measures up.

In fact, Symantec has ported several modules of NUM to the Power Mac: SpeedDisk, Fast Find, and Wipe Info all take advantage of the Power Macs' speed.

Symantec AntiVirus for Macintosh 4.0 is also now available in native Power Mac code; both the Power Mac version and the 680X0 code share a faster scanning algorithm. SAM can scan for viruses within DiskDoubler Pro, NowCompress, StuffIt, and Compactor Pro archives; and SAM can now create start-up decontamination disks, complete with all the appropriate enablers for a user's system. For networkwide protection, Symantec has introduced SAM Administrator, which allows network administrators to install and upgrade SAM on all the Macs in their enterprise.

Norton Utilities for the Macintosh (NUM) lists for $149, and Symantec AntiVirus for Macintosh (SAM) lists for $99. SAM Administrator comes free with the SAM ten-pack ($792) and also when you upgrade ten users to SAM 4.0 ($282). SAM 4.0 is required to use SAM Administrator. All three packages are expected to be available by the time you read this. Symantec, 503/334-6054.

—CAMERON CROTTY

MicroNet's Midrange Line

LOWER-COST STORAGE

MicroNet Technology has announced a complete line of SCSI desktop storage systems. With the Advantage series, MicroNet hopes to broaden its market, adding midrange users to its current base of high-end, workstation customers. The new line will include hard drives (170MB at $329 to 1GB at $1115), SyQuest drives (44MB at $349 to 270MB at $619), removable-cartridge optical drives (128MB at $1030), CD-ROM drives ($529), and DAT drives (2GB at $1369).



PAUL BERG

MicroNet's Advantage series includes a 270MB SyQuest drive (top) and a 500MB hard drive, among others.

See *New Products*, in this issue, for more information on the Advantage 200 and 270 SyQuest drives. MicroNet, 714/453-6000.

—CAMERON CROTTY

MW LAB PowerBook 150: How Fast Is It?

CORE-PERFORMANCE INDEX

Times as fast as a Classic (Classic = 1.0).

Use these standard ratings of overall performance, based on a core test suite, to compare systems across classes.

NOTEBOOK-SYSTEM PERFORMANCE TIMES

Times are in seconds. Shorter bars are better.

Use these results to compare the performance of systems for different types of real-world tasks within each class. For each type of system, results can be compared with other *Macworld* Notebook-System Performance Times.

Best result in test. Products are listed in decreasing order of overall performance.

	Common	Scientific	Processor	Drive Access	Video Display	Floating Point
	Typical business tasks in Microsoft Excel and Word that use the Mac's processor, drives, and video display.	We added to the common tasks several scientific calculations (which use floating-point math).	Several tasks in Adobe Photoshop, Aldus FreeHand, Claris FileMaker Pro, and Microsoft Excel and Word.	File opens in Adobe Photoshop and disk-based sorts in Claris FileMaker Pro.	Horizontal and vertical scrolling in Microsoft Excel and Word, and QuarkXPress.	Scientific recalculations (which use floating-point math) in Microsoft Excel.
PowerBook Duo 280c*	9.9	11.2	18	35	50	70
PowerBook 520*	8.8	9.1	20	33	75	101
PowerBook 165c	5.1	10.9	36	54	158	41
PowerBook 150*	5.1	5.2	38	47	72	219
PowerBook 145B	4.0	4.1	50	64	96	279

*Tested using a beta unit.



DOUG ROSS

Buying Macs by Mail

APPLE AUTHORIZES CATALOG SALES

For the first time in history, you can buy Macs by catalog from Apple-authorized dealers. So far, Technology Now and Elek-Tek in Illinois and Creative Computers' MacMall in Torrance, California, have all qualified under Apple's new catalog reseller program and have begun to advertise their wares at prices slightly below what you'd expect to pay on the showroom floor.

As part of the qualifying process, resellers had to prove that they could provide complete service and support facilities, but since this purchasing channel has Apple's official benison, long-distance purchasers also have the option of taking their new Mac to a local Apple dealer in case of trouble. Technology Now, 708/990-1560; Elek-Tek, 708/677-7660; Creative Computers' MacMall, 310/787-4500.

—CAMERON CROTTY

Schwab's StreetSmart

INVESTMENT SOFTWARE

Charles Schwab's StreetSmart for the Macintosh combines portfolio-management tools with a direct connection to online trading. Users with Schwab brokerage accounts can trade stocks, options, listed corporate bonds, and mutual funds, specifying market, limit, and stop orders, plus time limits and special conditions. Users' account information is continually updated and accessible, and users can also access the Dow Jones News/Retrieval and Standard & Poor's MarketScope services. Offline, StreetSmart includes graphing and reporting tools for analyzing investments. Users can also set up hypothetical portfolios to test allocation and trading strategies.

The StreetSmart software is currently available for $59. Purchasers receive a $25 discount on their first trade, and one hour each of free Dow Jones News/Retrieval and S&P MarketScope research, a 10 percent discount on commissions paid on all trades, a free company report, and 100 free price quotes. You must have an account with Charles Schwab to trade online, but there is no monthly fee. Charles Schwab, 415/627-7000.—CAMERON CROTTY



Online with StreetSmart: If you have an account with Charles Schwab, you can use its portfolio-management software to trade stocks in real time.

600-dpi Printer Wars

HP AND APPLE UP THE HI-RES ANTE

The ongoing battle for the office market has moved to a new level: 600 dpi. Both Hewlett-Packard and Apple have weighed in with well-received entries, and now both GCC and QMS have announced 600-by-600-dpi networkable laser printers aimed at the office workgroup.

The GCC Elite 600 is a 10-ppm, edge-to-edge laser printer that handles paper up to A4 or legal size (8½ by 14 inches). The printer supports PostScript Level 2, PCL 5, and HPGL/2 across all of its simultaneously active ports (LocalTalk, RS-232 serial, and Centronics), automatically sensing the protocol of an incoming job. GCC ships 60 PostScript fonts and 15 PCL fonts with the Elite 600, as well as 4MB of RAM (expandable to 20MB), and the printer lists for $1479. If your workgroup lives on an Ethernet, the Elite 600et, which lists for $1869, comes with 6MB of RAM and an EtherTalk card configured to support both 10BaseT and thin Ethernet. The card is also available sep-

continues

THE AMCOEX INDEX OF USED MAC PRICES

Machine/RAM/Hard Drive	Average Sale Price	Monthly Change
PowerBook 100/4MB/20MB	$675	$0
PowerBook 140/4MB/40MB	$900	–$50
PowerBook 180/4MB/80MB	$1700	–$50
PowerBook Duo 230/4MB/80MB	$1100	$0
Mac Classic/2MB/40MB	$425	+$25
Mac SE/30/2MB/40MB	$600	–$50
Mac LC II/4MB/40MB	$575	+$25
Mac IIsi/3MB/40MB	$525	–$50
Mac IIci/4MB/80MB	$900	–$25
Mac IIfx/4MB/80MB	$1100	+$50
Centris 650/8MB/230MB	$1200	+$25
Quadra 900/8MB/160MB	$2100	–$175

Index provided by the American Computer Exchange of Atlanta, Georgia (800/786-0717). It reflects sales during the week of June 20. Configurations include keyboard and exclude monitor and display board for noncompact models.

In Brief

SoundEdit Update

Macromedia has replaced the popular SoundEdit Pro program with SoundEdit 16. The new version of this multitrack sound-editing software is QuickTime-compatible and can edit 16-bit sound files. The application can also read and write the .WAV and .MOV Windows sound formats. The SoundEdit 16 package is currently available for $379 from Macromedia. 415/252-2000.

Speeding Your Power Mac

KS Labs has begun shipping a CPU booster for the Power Mac 7100/66. The $165 Alacrity accelerator product, which clips onto the 7100's clock crystal, makes the 7100 run at 80MHz. KS Labs has discontinued a similar speedup product for the Quadra 610 because the company found that it does not work in 30 percent of the Quadra 610s. (Not every unit of a particular Mac model can be accelerated; in such cases, the Mac is undamaged, according to the company, and KS Labs refunds the purchase price. The company says the average nonfunction rate for all its CPU boosters is 5 percent.) 614/374-5665.

230MB Optical Drive

LaserByte said it is preparing to ship a 3.5-inch, removable-cartridge magneto-optical drive. The LB3230 drive can fit 230MB of data on a single formatted cartridge. The drive also features an average access time of 36ms and an average sustained data-transfer rate of 1.2MB per second. The magneto-optical drive is backward-compatible to 128MB cartridges (for both reads and writes) and should be available from various distributors in August. LaserByte is currently charging $800 for sample units, but the list price of the final version of the finished drive was unavailable at press time. 408/734-9200.

arately for $329, and GCC expects to have a multiprotocol Ethernet card available this fall.

QMS's latest addition to its Hammerhead line, the 1060 Print System, is also capable of delivering 600-by-600-dpi output at 10 ppm. The 1060 has simultaneously active LocalTalk, serial, and Centronics ports; supports PostScript Level 2, PCL 5, and HPGL/2; and automatically switches to the appropriate protocol. The 1060 also has two interface slots that users can fill with QMS's Ethernet or Token Ring cards. QMS's printer handles paper up to A4 or legal size, it ships with 8MB of RAM (expandable to 64MB) and 39 PostScript fonts, and it lists for $2699.

In related news, QMS has also announced the larger 1660 Print System, which can print full-bleed 11-by-17-inch pages at 1200 by 600 dpi. When printing letter-size documents, the printer can achieve 16 ppm. The 1660 features the same ports, slots, and protocols as the 1060; has 39 resident PostScript fonts; and ships with 12MB of RAM (expandable to 64MB). The suggested retail price is $4199. GCC Technologies, 617/275-5800; QMS, 205/633-4300.
—CAMERON CROTTY

Joule Drives' Portable Dock

POWER TO GO

At Macworld Expo in August, La Cie will introduce its Joule Portable Dock, a lightweight connecting device for the company's Joule Drive Modules. An owner of a La Cie Joule Modular Storage System (see *News*, *Macworld*, August 1994) can take one of the Joule 2½-inch or 3½-inch Drive Modules on the road and use the Portable Dock to attach that module to a Macintosh. The Portable Dock provides power, SCSI, and termination to the drive, and will sell for $99 on its own, or, for example, bundled with a 230MB hard drive, for around the same price as competing hard drives, according to La Cie. The portable dock should ship in August. La Cie will also offer an optional battery pack for powering the selected Joule module. 503/920-9000.—T.M.



La Cie's Joule Portable Dock lets users take Joule drives for a spin.

BUGS & TURKEYS

Version 1.0.1 of Connectix's RAM-enhancement software, RAM Doubler, failed to fix a string of compatibility, speed, and network bugs in version 1.0. Along comes version 1.0.2, which, in addition to the fixes and optimizations, tries to prohibit shareware hacks like MaxRam that triple or quadruple physical RAM—Connectix says MaxRam can cause slowdowns due to increased hard disk swapping of compressed memory. The patch is available via online services or by calling Connectix at 800/950-5880.

Apple shipped its $129 Personal Diagnostics Program without one of the emergency disks—the one compatible with the Quadra 610, 650, 660AV, 800, and 840AV; the Centris 610, 650, and 660AV; the Mac TV; and the Workgroup Server 60 and 80. For the few who might own one of these models, Apple is selling the third disk for only $10.

Though released within a month of each other, Apple's original QuickTake digital camera is incompatible with the Power Macintosh. The camera software won't even run in emulation. At press time, Apple began shipping the QuickTake 100, a version for Power Macs and Windows machines. Owners of the original QuickTake can upgrade their software free by calling the Apple Order Center at 800/769-2775, ext. 7888.

Macworld will send you a Bug Report T-shirt if you are the first to inform us of a serious, reproducible bug that we report in this column, or a Turkey Shoot T-Shirt if we shoot your turkey in this space. See *How to Contact Macworld*.

After Dark Welcomes "Simpsons"

MORE KLINGONS, TOO

Berkeley Systems' latest version of its fabled screen saver, After Dark 3.0, includes EcoLogic, a set of energy-saving features that dim or turn off a monitor after a specified period of time. The software also tells you how much energy and money you'll save in a year at the various settings and at your local utility rates.

After Dark 3.0 comes with 30 screen-saver modules, 15 of them familiar classics, and 15 of them new, including Bad Dog, Fish Pro, and Flying Toasters Pro (with a sing-along feature for you toasting karaoke fans). After Dark 3.0 should be shipping now at a street price around $29. In October Berkeley expects to ship After Dark modules featuring characters from the X-Men comics, "Star Trek: The Next Generation," and "The Simpsons," complete with Bart-like behavior, Homer eating everything, and Grandpa's, um, wisdom. And Lisa wails on that sax. Berkeley Systems, 510/540-5535.—T.M.



Chocolate-covered desktop—Homer Simpson polishes off entire menus.

RasterOps' 21-inch Display

CLEARVUECOLOR 21

If George Bush was excited about 1000 points of light, how would he feel about more than 2 million pixels? That's how many dots you get at the maximum 1600-by-1280-pixel resolution of this 21-inch multifrequency color monitor. The ClearVueColor features a 0.25mm dot pitch; vertical refresh rates up to 90Hz (77Hz at resolutions up to 1280 by 1024 pixels); and digital controls for image size, position, geometry, and color temperature. The monitor comes with 13 preset resolutions and has space for 8 user-definable modes. The ClearVueColor 21 is both Energy Star and MPR II compliant, and it lists for $2449. RasterOps, 408/562-4200.
—CAMERON CROTTY

The State of the *Art.*




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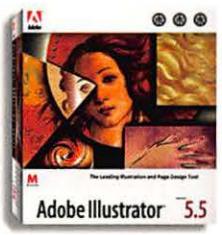
Here's what's going on in our head. Pencil sketch is scanned into Adobe Illustrator. Rainbow color effect ❶ is created with Linear Gradient. Scanned eye ❷ is colorized in Photoshop to simulate a sunglass effect. Grid of green & black in the other lens ❸ is altered with Twirl filter. Circles are added to the bottom of the letter "A" ❹, Pathfinder filter unites them. Letter is imported into Adobe Dimensions™ which adds perspective. Brush stroke ❺ is created with the Calligraphy tool and then painted with multi-color Gradient. The spreadsheet chart ❻ is converted into an Acrobat PDF file and imported. Light bulb glow ❼ is achieved with Shape Blending tool. Punk filter creates spikes ❽ on globe. Entire ad was created and spell checked using Adobe Illustrator 5.5.

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THE STATE *of* the MIND.

Adobe Illustrator 5.5

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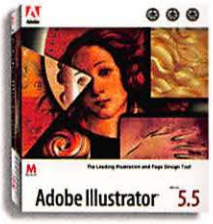
If you can *dream* it, you can *do* it.™

Adobe



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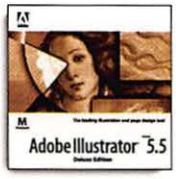
Adobe Illustrator 5.5



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Adobe™

Power Mac News

PowerBooks May Face Delay

APPLE CONSIDERS USING NEW 603 CHIP

Because the PowerPC 603 CPU's performance when running 680X0 programs in emulation is unacceptably slow, Apple has decided not to use the 603 for its next-generation PowerBooks, due in 1995, according to sources at Apple and other companies. Getting around the slow performance would have meant adding a large external cache, which would have increased power usage, heat emissions, and design costs; so Apple decided to drop the 603 completely. In response, Motorola, which has primary design responsibility for the 603, quickly developed a new version of the 603, dubbed the 603+, that includes a larger internal cache and will likely ship in a 100MHz configuration. Although the 603+ won't be as power-efficient as the original 603, Apple is counting on its power-management features and its high performance to compensate.

Preliminary tests at Apple show that the 603+'s performance in emulation is satisfactory. The problems with the 603 have delayed the development of the PowerPC PowerBooks and the PowerPC upgrade card for the PowerBook 500 series by up to several months, and their release is now expected to occur in the spring of 1995. (Apple's official ship date is the first half of 1995.) Motorola's price for the 603+ is the same as for the 603, so the final PowerBook costs should not be affected, an Apple source said.

Apple would not officially confirm these reports, although a spokeswoman did say Apple had not committed to using a particular PowerPC CPU for its PowerBook line. A year ago, the company had touted the 603 as its CPU of choice. Motorola would not comment directly to deny or confirm the 603+'s existence.

Memory Compatibility

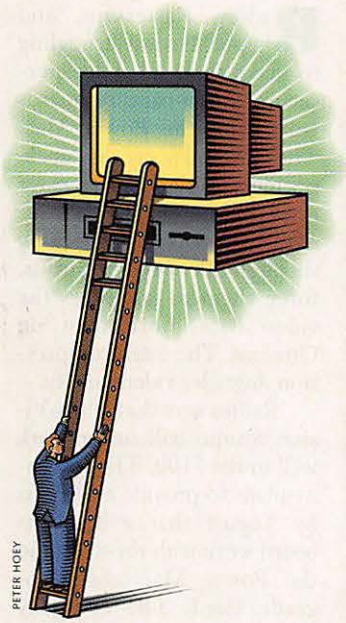
In related news, Apple will not commit to the compatibility of the memory in the PowerBook 500 series with the forthcoming PowerPC upgrade card. Unlike the desktop Power Macs, whose motherboards run at half the PowerPC 601's rated speed and so don't need fast memory, the PowerPC PowerBooks' motherboards will run at the PowerPC 603's full speed. That may require faster memory than the PowerBook 500 series has.—GALEN GRUMAN AND MACWORLD STAFF

Development Tool Shortage

COMPILERS AVAILABLE FOR SOME LANGUAGES

The initial dearth of native Power Macintosh applications can be partly blamed on the shortage of finished Power Mac programming tools. Fortunately, PowerPC-savvy development tools are starting to ship.

Unstable early beta versions of Power Macintosh development tools in the dominant languages for commercial Macintosh development—C and C++—impeded progress on Power Mac native applications. Apple and Metrowerks shipped final versions of their Power Mac C and C++ programming tools only in mid-May, two months after the Power Macs shipped. Motorola, Symantec, and XVT plan to deliver Power Mac C and C++ compilers by October.



PETER HOEY

Developers whose products use Pascal, such as Claris's Filemaker Pro, are faced with a choice of rewriting their applications in C or C++ or waiting a couple more months for Power Mac Pascal tools. Apple has said that programmers working in Pascal, formerly Apple's language of choice, should learn C++. Symantec and Apple don't plan to offer Power Mac–capable Pascal tools; however, Metrowerks and Language Systems do plan to by late summer.

And Apple tells developers flat out not to use assembly, the language used to develop WriteNow and WordPerfect. Even so, England-based MicroAPL has released PortAsm, a 680X0-to-PowerPC translator to let developers salvage some 680X0 code.

Programmers emphasize that while they've gotten real work done with beta tools, the overhead created by dealing with unfinished products added to the already difficult process of writing for a new microprocessor. For example, that was one reason for the delay in introducing QuarkXPress 3.3 for Power Mac, according to Quark.

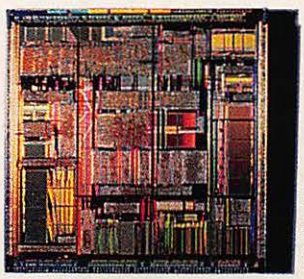
Apple (through APDA), 716/871-6555; Language Systems, 703/478-0181; Metrowerks, 514/747-5999; MicroAPL, 44 (71) 922-8866; Motorola, 512/345-1145; Symantec, 503/334-6054; XVT, 303/545-3106.—JIM FEELEY

Glimpse of the Future

FASTER MACS, PCI BUS, MAYBE IBM COMPATIBILITY

New Power Macs are likely to ship at the end of the year or in early 1995, but Apple will not yet detail product plans. However, the company has demonstrated a prototype Power Mac using a 120MHz PowerPC 601 CPU

continues



LUIS DELGADO

The PowerPC 604 will form the heart of powerful Power Macs due to be released next year.

and has stated its goal of increasing performance on a regular basis.

So should prospective Power Mac owners delay their purchases? In most cases, no. Apple does not expect to see the dramatic speed difference between current and next-generation Power Mac models that it saw between the Quadras and the first Power Macs. Even the more powerful PowerPC 604 CPU, to be used in some future Power Macs, won't offer the two-to-four-times performance increase over the first 601-based Power Macs that the first Power Macs offered over the 68040-based Quadras, according to Apple. Much of the speed boost between the Quadras and the Power Macs was due to the use of PowerPC native software.

But if you're thinking of also investing in NuBus cards, you might want to wait. When Apple ships the first Power Macs with the PCI expansion bus in 1995, it's highly unlikely to also include NuBus slots. Earlier this year, vendors discussed rumors that Apple would have the two buses coexist as a transition aid, much as most PCs now use some combination of the four popular PC buses (ISA, EISA, VLB, and PCI), but Apple discounts those rumors.

Meanwhile, the technical teams from Apple and IBM seeking to make IBM's PowerPC Reference Platform specification accommodate Apple's system needs are making good progress, according to Gary Griffiths, director of business development at IBM Power Personal Systems. If the two companies agree on a common specification, the way would be paved for non-Apple, PowerPC-based computers to run Power Macintosh system software. But questions over business strategies—should Apple open up the Mac to other machines?—may delay or scuttle a final agreement. Apple says work is ongoing and that it expects no quick convergence of the specifications.—GALEN GRUMAN

Video Hits Roadblocks

SOME UPGRADES DUE SOON, OTHERS WAIT FOR PCI

Radius, RasterOps, and SuperMac are struggling to make their 60-fields-per-second video-capture boards work with the Power Mac. The companies say that unexpectedly slow data-transfer rates through the Power Mac's NuBus, especially through the 7100's NuBus, force them to compress the video data more than on Quadras. The extra compression degrades video quality.

Radius says that VideoVision Studio will never work well in the 7100. The company plans to provide a $359 fix by August that will let its board work with the 8100 and the Power Macintosh Upgrade Card. The company says that the 7100 yields a NuBus data-transfer rate of 1.2MB per second, compared with over 6 MBps on Quadras. The 30-fps VideoVision without the 60-fps Studio option works fine in Power Macs now, according to Radius.

RasterOps says that while the 7100 presents more problems than the 6100 or the 8100, it plans to have MoviePak2 working on all three Power Mac platforms by late July. Upgrades are free.

SuperMac, whose DigitalFilm board captures 60-fps video at 320-by-240-pixel resolution (versus full-screen, 640-by-480-pixel resolution in the other boards), says its board will work fine in both the 7100 and the 8100 by late August. Upgrades will be $79.

Radius and SuperMac also acknowledge poor data transfer with the Power Macintosh Upgrade Card. A fix for this problem is uncertain. Each vendor's fix will require that new software, new ROMs, and in some cases, new chips be installed on the boards.

Vendors say that after the digitizing boards are upgraded to work with Power Macs, the Quadra 840AV will still provide the highest NuBus transfer rates, followed closely by the 8100 and then the Quadra 950, 800, and 650.



SCOTT PETERSON

RasterOps's MoviePak2 Pro Suite is one of several video-capture cards getting Power Mac updates.

Other vendors of video hardware—Avid, Digital Translation, FAST Electronic, and ImMix—have yet to announce specific plans for Power Mac support. Avid says that it won't consider the Power Mac platform complete until Apple ships Power Macs with a full native operating system and PCI slots.

Radius, 408/434-1010; RasterOps, 801/785-5750; SuperMac, 408/541-6100.
—JIM FEELEY

Power Watch

THE LATEST ON PRODUCTS FOR THE POWER MACS

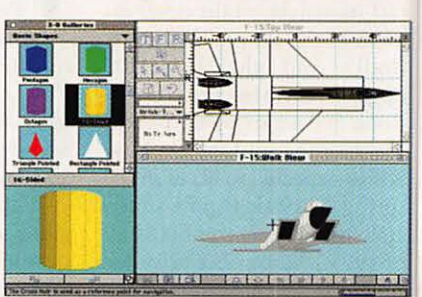
Dataquest, a market-research company, says it expects a short-term shortage of 16MB RAM chips by the end of this year and early in 1995, partly because of demand generated by the Power Macs. The high-power programs that Power Mac users will want benefit from large amounts of RAM, which will increase the demand for 16MB SIMMs. However, Dataquest says, the supply of such SIMMs is not increasing at the same rate. The Power Macs aren't alone in using such RAM—the popularity of Pentium PCs is another major force in raising demand.

• Absoft has released its $699 Fortran 77 Software Development Kit, which allows the development of native Power Mac software. Neuron Data expects to ship Power Mac versions of its software-development tools by fall of this year. Prices vary. Absoft, 313/853-0050; Neuron Data, 415/321-4488.

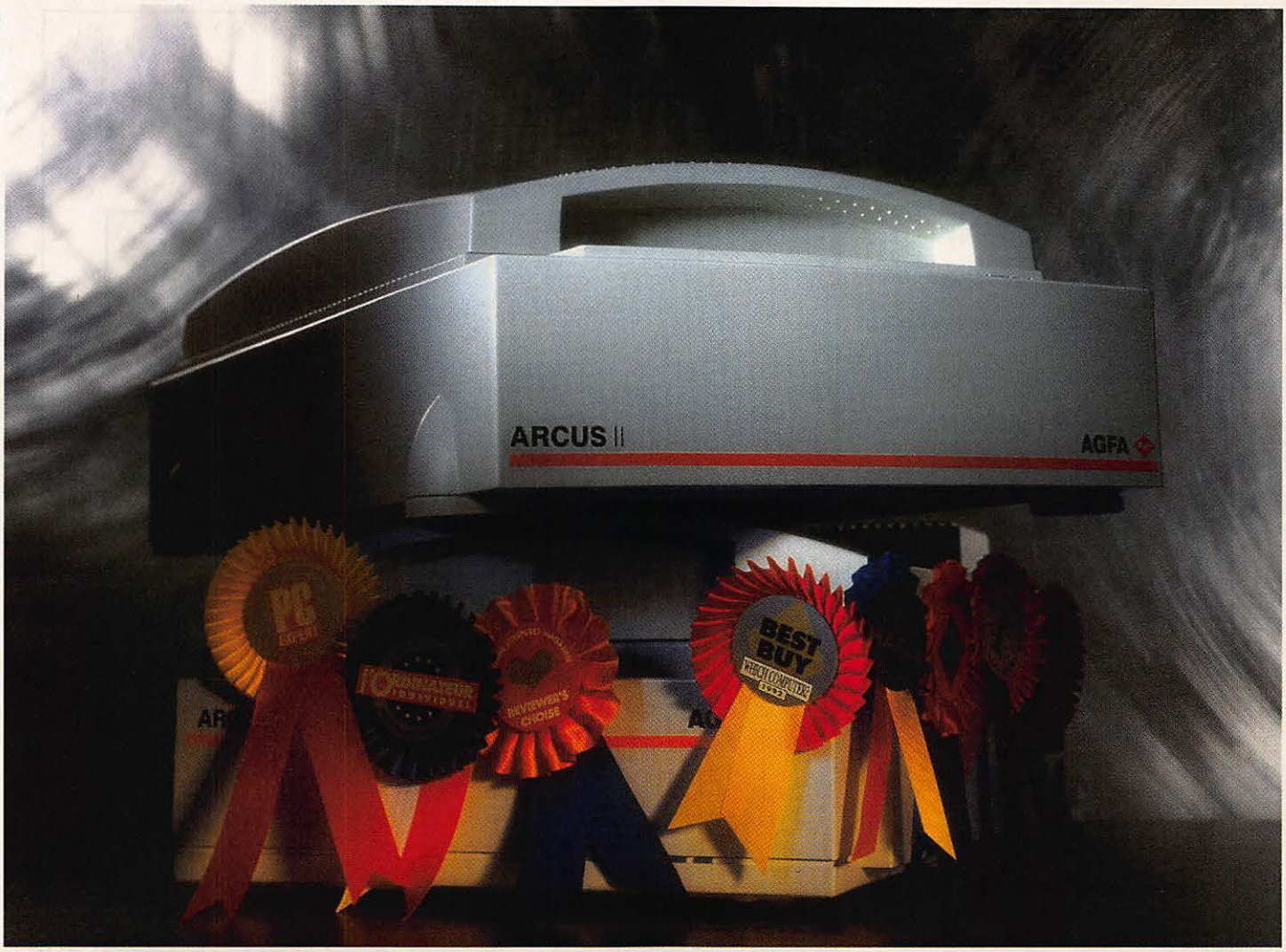
• Apple Computer has anounced a PowerPC upgrade card for 040-based Macs using the LC III–style PDS (the Quadra 605, the Quadra 630 and its LC and Performa variants, the LC and Performa 470 series, and the LC and Performa 570 series). The card does not plug into the PDS, since the slot's limited data-transfer capacity would result in poor PowerPC performance; instead the card plugs directly into the Macs' 040 socket. Apple expects the card's price to be about $700, with availability later in the fall. 408/996-1010.

• Engineered Software has released PowerCADD 1.0, the native Power Mac version of the company's $795 PowerDraw CAD software. The upgrade for registered users of PowerDraw version 5 costs $79. Although the Power Mac and 680X0 Mac programs have different names, they are functionally the same. 910/299-4843.

• Virtus offers the $99 Virtus/VR 3-D design software. Upgrades cost $20. 919/467-9700.—GALEN GRUMAN



Virtus/VR takes advantage of the Power Mac's fast processor to build 3-D objects.

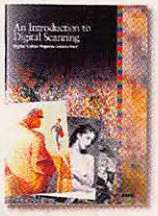


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Truth is, with everything we added to the Arcus II, we're expecting some more awards. But the real prize winner will still be you. Call 1-800-685-4271 to find out more information on Agfa's new scanners.

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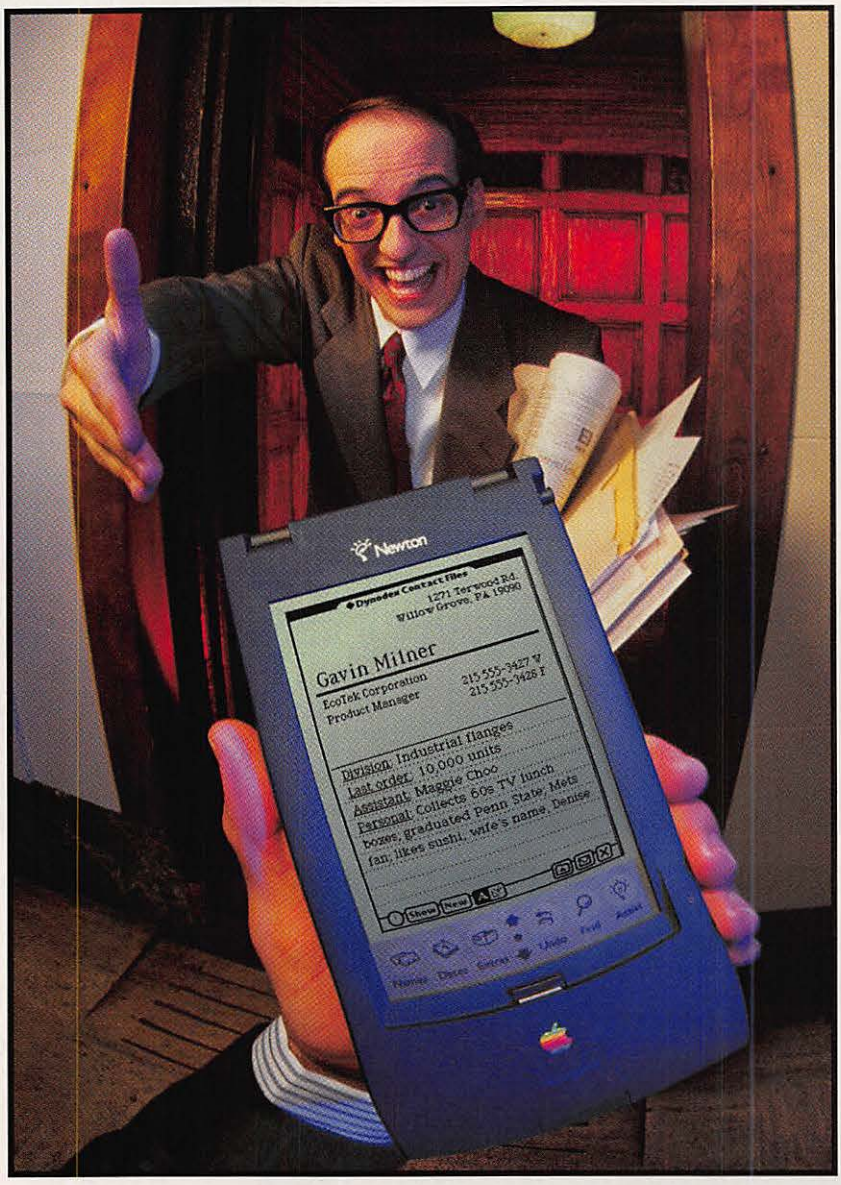
Circle 158 on reader service card

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New Products

THE LATEST MACINTOSH RELEASES

by Cameron Crotty

THIS SECTION COVERS MACINTOSH PRODUCTS FORMALLY ANNOUNCED BUT NOT YET EVALUATED BY *MACWORLD*. UNLESS OTHERWISE STATED, THE MINIMUM REQUIREMENTS FOR OPERATION ARE A MAC PLUS, WITH 1MB OF RAM, RUNNING SYSTEM 6. ALL INFORMATION AND PERFORMANCE CLAIMS ARE SUPPLIED BY THE PRODUCT VENDOR AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY *MACWORLD*. ALL PRICES ARE SUGGESTED RETAIL. PLEASE CALL VENDORS FOR INFORMATION ON AVAILABILITY.

HARDWARE

AAUI-2 and AAUI-T

These Ethernet transceivers connect to the AAUI on-board Ethernet port optionally available on Quadras and Power Macs. The AAUI-2 connects to thin Ethernet networks (10Base2), while the AAUI-T works with 10BaseT networks. Both adapters are equipped with power-on LEDs. Both the AAUI-2 and AAUI-T also work with LaserWriter IIg and 630 laser printers. $89. MacNet, 408/954-8888, 800/486-2638; fax 408/434-9575.

Advantage 200

This SCSI-2 removable-cartridge SyQuest drive can read and write 5¼-inch cartridges in 44MB, 88MB, or 200MB format. The drive features a sustained data-transfer rate of 2 MBps and an average access time of 18ms. $699 for both internal (available only for Quadras and Power Macs) and external versions. MicroNet Technology, 714/453-6000; fax 714/453-6001.

Advantage 270

Based on SyQuest's 3½-inch removable-cartridge mechanism, this SCSI-2 drive can read and write 105MB and 270MB cartridges. The drive features an average access time of 13ms and a sustained data-transfer rate of 2 MBps. $619 for both internal (available only for Quadra 800 and 840AV) and external versions. MicroNet Technology, 714/453-6000; fax 714/453-6001.



Advantage 270

Clipper

As far as your Mac is concerned, the Clipper looks like a SCSI-2 hard drive, but this solid-state storage device uses 72-pin, 16Mbit, 32Mbit, and 64Mbit DRAM modules to provide nearly instantaneous access to your data. The Clipper connects to a standard SCSI chain, uses its own power supply, and comes with an internal sealed lead-acid battery that maintains data for up to 12 hours after a power failure. 16MB internal $2615, external $2915; 512MB internal $29,195, external $29,495. Curtis, 612/631-9512; fax 612/631-9508.

DGR 1.3REM

Roll up your sleeves and stuff 1.3GB of data onto each magneto-optical cartridge with this 5.25-inch drive. The 1.3REM features an average access time of 29ms and a sustained data-transfer rate of 2.28 MBps; it can also read from and write to 595MB and 650MB cartridges. A 1.3GB cartridge is included, as are a SCSI cable, a terminator, and Anubis's formatting software. $2199. DGR Technologies, 512/476-9855, 800/235-9748; fax 512/476-6399.

LC/Performa PDS Cache Card

Get a performance boost for your LC III, LC 520, or Performa 450, 466, 467, 550, or 560 with this 128K static-RAM cache card. The card plugs into the PDS slot and comes with control-panel software to switch the cache on and off. $119. TechWorks, 512/794-8533, 800/688-7466; fax 512/794-8520.

M202

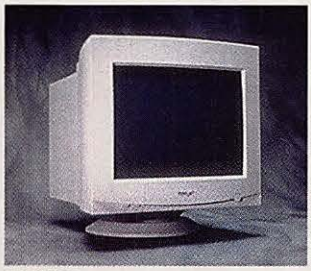
This print server has ports for up to four printers: two parallel and two serial. The M202 has both thin Ethernet and 10BaseT ports; supports TCP/IP, IPX, and EtherTalk simultaneously; is SNMP manageable; and can receive start-of-job, end-of-job, and PostScript-error messages via SMTP E-mail. The server can also be configured to send print jobs to the first available printer. $595. Microplex Systems, 604/444-4232, 800/665-7798; fax 604/444-4239.

MultiModemPCS-Mac

Who says you can't have your cake and eat it too? While you're transmitting data between two MultiModemPCs, you can pick up your handset and have a simultaneous voice conversation. This fax modem supports protocols up to and including V.32terbo (19.2-Kbps transmission speed), V.42bis (data compression), and MNP Class 5 (error correction). It ships with MultiTech's MultiExpressPCS-Mac software, which can handle fax and data transmissions, and additionally turns your Mac into a phone/voice-mail system, with speed-dialing; hold; mute; and unified in- and out-baskets for fax, data, and voice communications. $799. MultiTech Systems, 612/785-3500, 800/328-9717; fax 612/785-9874.



MultiModemPCS-Mac



MXP17F

MXE15F, MXP17F, MXP21F

Three multiresolution color monitors, each featuring a maximum refresh rate of 120Hz. The MXP monitors have top resolutions of 1600 by 1200 pixels, and the MXE15F has a maximum resolution of 1280 by 1024 pixels. The dot pitch of the 15-inch MXE15F and the 21-inch MXP21F is 0.28mm, while the dot pitch of the 17-inch MXP17F is 0.26mm. All three monitors have digital controls, including pincushion, rotation control, color control, and horizontal and vertical size. The MXP models also have LCD displays for the controls, or you can use the included software and serial cable to adjust the settings from your Mac. MXE15F $749; MXP17F $1299; MXP21F $2499. MAG InnoVision, 714/751-2008, 800/827-3998; fax 714/751-5522.

Quadra Cache

Newer Technology calls this 128K cache card slotless because it plugs into the CPU socket on the motherboard on your Centris or Quadra (except for the Quadra 605), rather than into the PDS or NuBus slot. To install the Quadra Cache, you remove the CPU from the motherboard (instructions and a chip-pulling tool are included), place it in an identical socket on the cache card, and plug the card into the motherboard socket. The manufacturer claims speed improvements of 10 to 40 percent, depending on the application. $375. Newer Technology, 316/685-4904, 800/678-3726; fax 316/685-9368.

Spectra-Com P192mx

This pocket-size (4.5 inches by 3.5 inches by 1 inch) V.32terbo fax modem sends and receives data at up to 19.2 Kbps, and also supports most standard protocols, including V.32bis (14.4 Kbps), V.42bis (data compression), and MNP Class 5 (error correction). The fax hardware sends and receives faxes at up to 14.4 Kbps and supports the V.17 protocol. The P192mx can be used with a 9V battery or the included power adapter; it ships with a serial cable, carrying case, Faxstf fax software, and MicroPhone LT comm software. $249. Bay Connection, 408/270-8070, 800/475-8329; fax 408/270-0698.

Tahoe-230

You wish that Tahoe were your destination, and not just the name of this 230MB, 3.5-inch, SCSI, removable-cartridge, magneto-optical drive. The Tahoe-230's average access time is 38ms, and it can sustain a data-transfer rate of 1.5 MBps. At 1.8 pounds, and 1.4 inches by 4.5 inches by 8 inches, it's portable, and an optional battery pack provides about 3.5 hours of typical use. The Tahoe-230 is also backward-compatible, automatically detecting and

continues



Tahoe-230

reading 128MB media. $999; battery pack and travel case $199. Pinnacle Micro, 714/727-3300, 800/553-7070; fax 714/727-1913.

VideoVision Telecast
Attention, professional video editors: this 19-inch rack-mountable box plugs into your Mac via two NuBus cards and provides Betacam-quality video output. The VideoVision Telecast box has a full range of analog video (composite, S-Video, component) and digital and analog audio (XLR, AES/EBU, S/PDIF) inputs and outputs. All the hardware works together to provide 16-bit stereo audio; 30-frame, 60-field full-motion video capture and playback; full genlock capability; and support for SMPTE time code for audio and video. Requires VideoVision Studio. Price not available at press time. Radius, 408/434-1010, 800/227-2795; fax 408/954-1927.

SOFTWARE

Amazing Animation
This multimedia tool is aimed at helping kids create animations quickly. At its simplest level, users can just choose a background and a character, move the character across the screen, and let the software create the animation. More advanced users can create custom backgrounds and characters with the included paint tools, record and add their own sounds, and add text and transition effects. Productions can be exported as QuickTime movies. 2MB min. memory;



Amazing Animation

requires Mac Classic. $59. Claris Clear Choice, 408/987-7000, 800/325-2747; fax 408/987-3932.

Astro Chase 3D
You'd think that, after years of constant attack by intergalactic nasties of every description, Earth would have its defenses in order—but no. In this fast-action shoot-'em-up, you take command of an Ultraship armed with solar plasma beams, cosmic energy weapons, and smart missiles. Your mission: destroy the Mega Mines converging on Earth before they blow it to smithereens. 3MB min. memory; requires color. $59.95. MacPlay, 714/553-3522, 800/736-5738; fax 714/252-2820.

Castles: Siege & Conquest
Diplomat or general? Prince of peace or emperor of entropy? You'll discover what type of ruler you are in this strategy game set in France during the Hundred Years' War. The year is 1310, and the king is dead. As one of five powerful warlords, you must unite the territories of Bretagne, building the size, wealth, and power of your empire through diplomacy, warfare, and trade. Your ultimate mission is to petition the Pope to back your claim to the throne. 3MB min. memory; requires 8-bit color. $59.95. MacPlay, 714/553-3522, 800/736-5738; fax 714/252-2820.

Chiral
You thought that you left atomic chemistry behind in high school, but it's back with a vengeance in this timed puzzle game. Thanks to a group of scientists and an experiment that can't be stopped, thousands of unstable atoms are flying though the atmosphere. To save humanity, you must combine them into stable molecules. Some atoms need more bonds than others, but you must leave no bond unfilled—the fate of humankind is in your hands. Requires 8-bit color. $15. Ambrosia Software, 716/427-2577, 800/231-1816; fax 716/475-9289.



Chiral

Epilogue
You can't send your copy of Adobe Photoshop to school to learn PostScript, but now you can buy a PostScript interpreter. Epilogue rasterizes PostScript and EPS files into any software that supports Photoshop plug-in modules. Users can flip images vertically or horizontally, control the size and resolution of the final image, and also rasterize selected pages from multipage files. The package consists of Epilogue Server (the software interpreter), Epilogue PS (the plug-in), and Epilogue Fastview, which previews PostScript and EPS files. 12MB min. memory; requires Mac II, 120MB of free disk space, System 7, and math coprocessor. $895. Total Integration, 708/776-2377; fax 708/776-2378.

The Far Side Screen Saver Collection
If your vision of the future involves a world ruled by cows, then check out this collection of screen savers based on Gary Larson's "Far Side" cartoons. There are 14 animated modules complete with sounds, and the included screen-saver engine supports After Dark modules. 2.5MB min. memory; requires 8-bit color. $39.95. Delrina Corp., 408/363-2345, 800/268-6082; fax 408/363-2340.

FileHunter
With this QuarkXPress XTension, you can search for files by name, type, and modification date. Once you have a list of selected files in FileHunter's floating palette, you can import any or all of the files by double-clicking on them. FileHunter finds only files that Quark can

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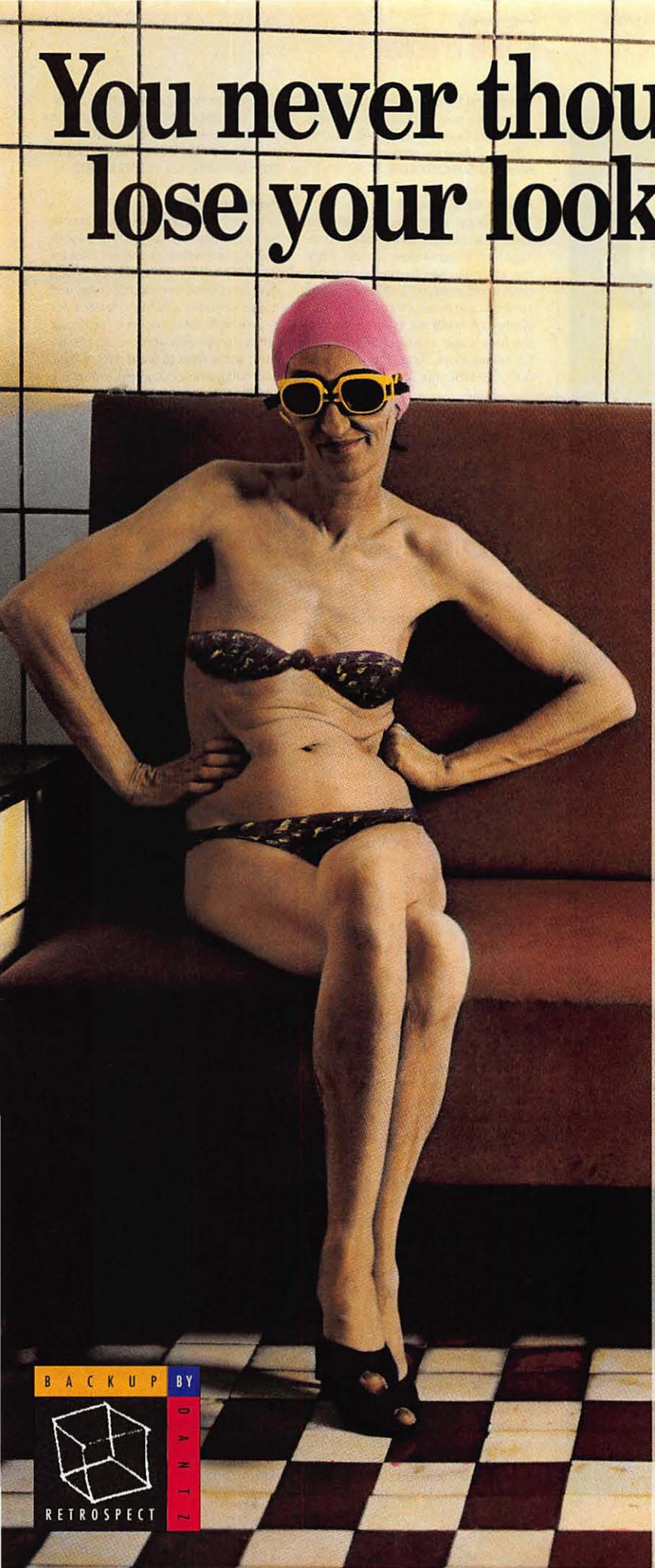
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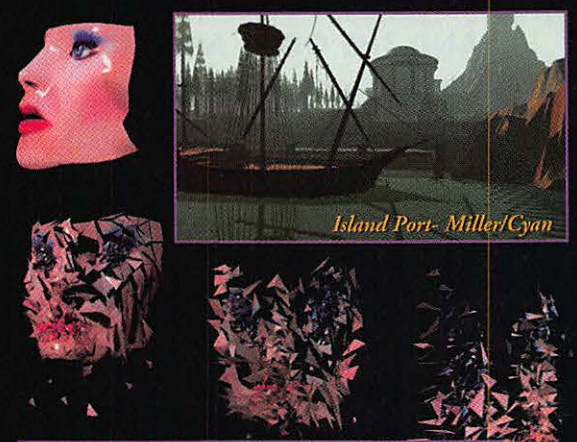
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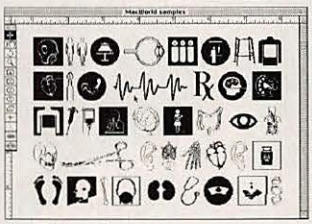
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import, and the utility can search for file names that contain a given text string. Requires QuarkXPress. $95. North Atlantic Publishing Systems, 508/250-8080; fax 508/250-8179.

Health Care Images

This package offers over 150 medical symbols and images contained in a TrueType font. Images include human anatomy, physician's instruments, hospital-department icons, ECG waves, handicap symbols, and international health-care symbols. A PostScript Type 1 version of the font is also included. $69.95. The Communications Shop, 716/473-1650, 800/733-1650; fax 716/473-5201.



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The Internet Membership Kit

You've read about it, you've heard about it, and now you want a piece of the Internet. The Internet Membership Kit comes with Eudora E-mail software, as well as TurboGopher, Fetch, and StuffIt Expander, for finding, retrieving, and decompressing files. Users also get two books: Ventana's *Internet Tour Guide* and Osborne/McGraw-Hill's *Internet Yellow Pages*. The Kit also includes an offer for a one-month free membership on CERFnet (a commercial Internet service provider), plus six free hours of connect time. 4MB min. memory; requires System 7, 9600-bps modem, Internet account with SLIP or PPP connection. $69.95. Ventana Press, 919/942-0220, 800/743-5369; fax 919/942-1140.

Kid Keys

This software helps kids get an early start on learning the computer keyboard and the alphabet. Consisting of three activities—Magic Keyboard, Dragon Tunes, and Monster Rescue—the package reinforces hand and key positions with music, sound effects, and animation. Children start with Magic Keyboard, which displays animations and letters in response to key presses. Dragon Tunes associates musical tones with letters on the keyboard. In Monster Rescue, kids must correctly type words that appear on the screen to rescue the monsters. 2MB min. memory; requires Mac Classic. $39.95. Davidson & Associates, 310/793-0600, 800/545-7677; fax 310/793-0601.

MacToPic Plus

If you have to connect to a host computer running Unix, Pick, or Vmark's uniVerse, you might need this software that emulates ADDS Viewpoint, Wyse 50, DEC VT101, and McDonnell Douglas Prism terminals, with full function-key support. This latest version of MacToPic Plus supports the Comm Toolbox, color pictures, and QuickTime movies. Users can select host menu items with a mouse, remotely control data transfers, and switch between 80-column and 132-column modes. 2MB min. memory. $295. Carnation Software, 206/333-4288; fax 206/333-4902.

Professor Office

Learning how to use a new program can be as fun and easy as getting a tooth pulled, but this instructional software for Word 5.1 and Excel 4 is intended to help new users climb the learning curve, and it also provides a ready reference for experienced Mac jockeys. Professor Office combines lessons, practice exercises, and quizzes to teach skills as basic as creating a new document and setting preferences, and as advanced as analyzing spreadsheet information. $49.95. Individual Software, 510/734-6767, 800/822-3522; fax 510/734-8337.

Star Trek Screen Posters

Is that a Klingon warship dead ahead, or just one of the scenes from this collection of 35 full-screen images? This package contains scenes from the *Star Trek* movies, pictures of starships and starbases, shots of *Star Trek* characters, screens of trivia, and images of promotional movie posters. With the included After Dark engine, you can install the images as desktop art or use them as a slide-show screen saver. 2MB min. memory; requires color. $32.25. Berkeley Systems, 510/540-5535, 800/344-5541; fax 510/540-5115.



Star Trek Screen Posters

Trak-It HR

Previously called Abra 2000 Mac, the latest release of this human-resources-management software provides users with databases, reports, and formulas for maintaining essential employee information. Trak-It HR features interface improvements, plus additional fields for collection of health information, termination data, and information on previous employers. The new version also has more reports, including salary-change analyses and turnover information. 2MB min. memory. 75 employees $695; 150 employees $995; unlimited employees $1695. Trak-It Solutions, 408/737-9454; fax 408/737-9456.

Virex Administrator

Do you count on your network users to scan for viruses? With this software, network administrators can remotely scan for viruses and repair any damage, either on command or on a schedule. They can also install and update Virex on individual computers or globally across the network. Virex Administrator maintains an audit trail of scans, updates, detections, and repairs. 2MB min. memory; requires System 7 on administrator's machine. 25-machine license $200. Datawatch Corp., 919/549-0711; fax 919/549-0065.

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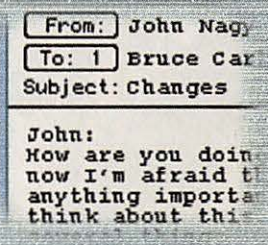


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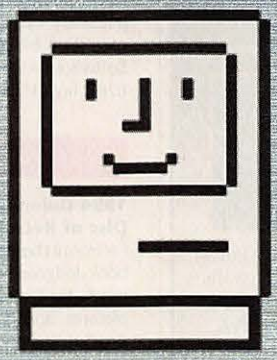
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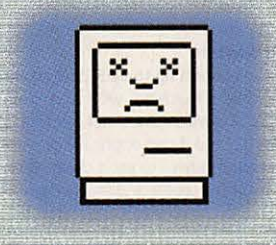
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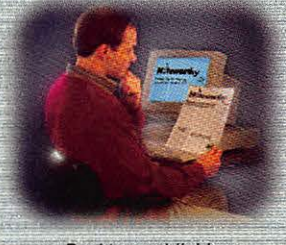
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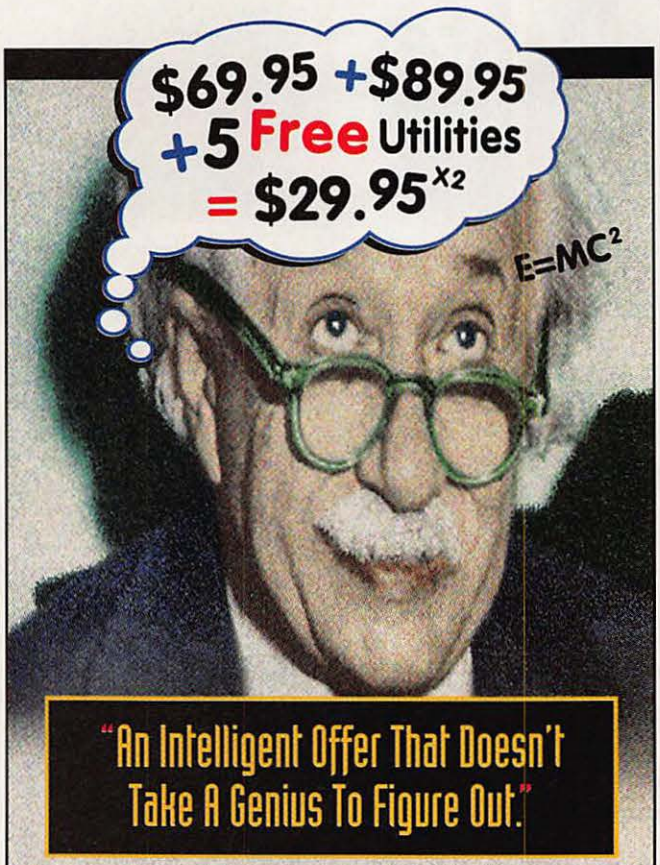
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CD-ROMS

1994 Guinness Multimedia Disc of Records

Far from its humble beginnings as a small book designed to resolve barroom arguments, the Disc of Records adds sounds, pictures, and movies to the *Guinness Book of Records*. This year's version has a new graphic interface; users can search by topic, text of records, or superlative (fastest, oldest, and so on). For the hard-core record-browser, the Random Record Explorer randomly selects and displays a series of records and their accompanying pictures in a slide show from a database of roughly 400 achievements. $49.95. Grolier Electronic Publishing, 203/797-3500, 800/285-4534; fax 203/797-3835.

Co-Net

This disc contains information on obtaining assistive technology for people with disabilities. The Abledata database lists over 19,000 products for the disabled. The Cooperative Service Directories list disability-related services. The Publications, Media, and Materials databases list books, pamphlets, videos, and other information sources. Finally, Co-Net includes a library of 34 key documents in text format, including the text of the Americans with Disabilities Act. The Trace Center publishes regular updates of Co-Net. Single issue $27; two-issue subscription $50. Trace Center, University of Wisconsin-Madison, 608/262-6966; fax 608/262-8848.

Letraset Images for Multimedia and Desktop Publishing

If you're looking for a heap of nails, a pile of pretzels, or a crush of rose petals, the three discs in this collection could fill the bill. Titled Industrial, Having Fun, and Natural, each disc has 120 photographs of everything from tin cans to golf balls to wood grain. The images are saved as 72-dpi, 24-bit RGB TIFF files, and are intended for multimedia or other on-screen uses. High-resolution versions of all the images are available for an additional fee. $249 per disc; three-disc collection $599. Letraset USA, 201/845-6100, 800/343-8973; fax 201/845- 5047.

The Tranquility Series

The images on this collection of four discs can help bring nature into your designs. Each disc contains 100 nature studies ranging from gentle washes of color to crisply detailed pictures with saturated colors. The titles are Flowers, The Woods, The Beach, and Japanese Gar-



The Tranquility Series

den. All four discs are in Photo CD format, and the purchase price covers all licensing fees. A sampler disc containing ten images from each disc in the collection is available. $59.95 per disc; entire collection $214.80; sampler disc $25. Studio 7 Technical Documentation, 415/579-4931; no fax.

ACCESSORIES

Multi-Media Volume Controller

Don't have a pair of handy volume-control buttons on your Mac? Plug this device into your Mac's sound-out port, then plug your external speakers into the device, and presto, you get a volume-control knob. No more schlepping into the Sound control panel to crank it up or turn it down. $24.95. SC&T International, 602/470-1334, 800/408-4084; fax 602/470-1507.

SCSI Switch

You can connect up to six SCSI-2 chains to a single machine with this box. The SCSI Switch does not require a device ID, and it can optionally provide termination power to each chain. With the included control-panel software and serial cable, you can switch between active chains without having to restart. $1295. Applied Concepts, 503/685-9300, 800/624-6808; fax 503/685-9099.

SCSIVue Active Diagnostic Terminators

Assembling a SCSI chain need not be a case of plug-and-pray. This SCSI termination device monitors the SCSI line and adjusts the termination power to maintain a high signal-to-noise ratio. The SCSIVue also has four LEDs that monitor proper termination power, interactions between SCSI devices, and the SCSI acknowledge and request lines. $59. Granite Digital, 510/471-6442; fax 510/471-6267.

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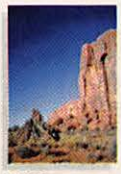

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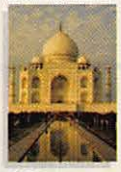

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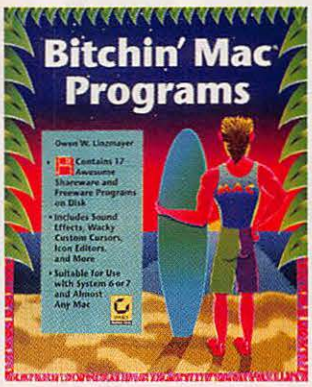
SlimPack

SRS-PC20
Compact and inexpensive, these powered speakers are magnetically shielded to prevent interference with your monitor. The 2w amplifier is powered by either four AA batteries or an AC adapter (sold separately). The speakers have built-in volume and power controls, and users can run the speakers with the amplifier off to save battery life. $39.95. Sony Corp. of America, 201/368-9272, 800/342-5721; no fax.

Vivid 3D
Is your Mac's sound leaving you flat, despite the powered stereo speakers you bought? The Vivid 3D plugs into your Macintosh's audio-out port and processes the sound on the way to your speakers, adding audio cues that make it seem as if the sound is coming from all around you. Users can switch the processing on and off, and the box has a volume control. Vivid 3D requires an AC adapter, which is included. Requires powered speakers. $99. NuReality, 714/442-1080, 800/501-8086; fax 714/852-1059.

BOOKS

Bitchin' Mac Programs
Just because you use your Mac to run your business doesn't mean you're soulless. This book ships with shareware programs written to put life and fun back into you and your Mac. Author Owen Linzmayer describes how to install, configure, and use the software to its best advantage. You get a screen animator, a sound-effects editor, an icon editor, music files, talking-clock software, and other programs. 135 pages. $19.99. Sybex, 510/523-8233, 800/227-2346; fax 510/523-2373.



Bitchin' Mac Programs

ClarisWorks Companion
You may not want to write a doctoral thesis about ClarisWorks, but if you need to learn its ins and outs quickly, this book could be for you. Author Barrie Sosinsky explains all the features of the program, from the word processor to the database and communications tools, with an emphasis on getting a beginning user up and running. The book includes shortcuts to effective graphics and hints on combining different types of elements in a single document. 281 pages. $14.95. Hayden Books, 317/581-3500, 800/428-5331; fax 317/581-3550.

Designing NetWare Directory Services
NetWare is coming to the Macintosh—in fact, for some it's already here. This book, written by Gamal Herbon, is a reference for network administrators and designers on installing and maintaining NetWare 4.X networks. Through discussions and examples, the book helps the reader lay a solid foundation for efficient directories on either a small LAN or a large enterprise network. 320 pages. $29.95. M&T Books, 212/886-9255, 800/488-5233; fax 212/807-6654.

Fundamental Photoshop
In this introduction and guidebook to the magic of image editing, authors Adele Droblas-Greenberg and Seth Greenberg cover both the Macintosh and Windows versions of Adobe Photoshop. Readers will learn how to digitize images, create color separations, blend images together, and other Photoshop fundamentals. The authors also teach how to take advantage of Photoshop's unique tools, and how to create custom brushes, colors, and patterns. A tutorial on color theory and professional color-correcting and retouching techniques is included. 608 pages. $27.95. Osborne/McGraw-Hill, 415/549-6600, 800/227-0900; fax 415/549-6603. m

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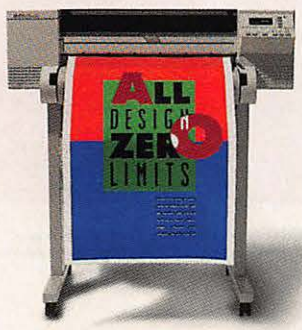


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The HP DesignJet 650C/PS printer. Large-format at a small price.

$9,995*

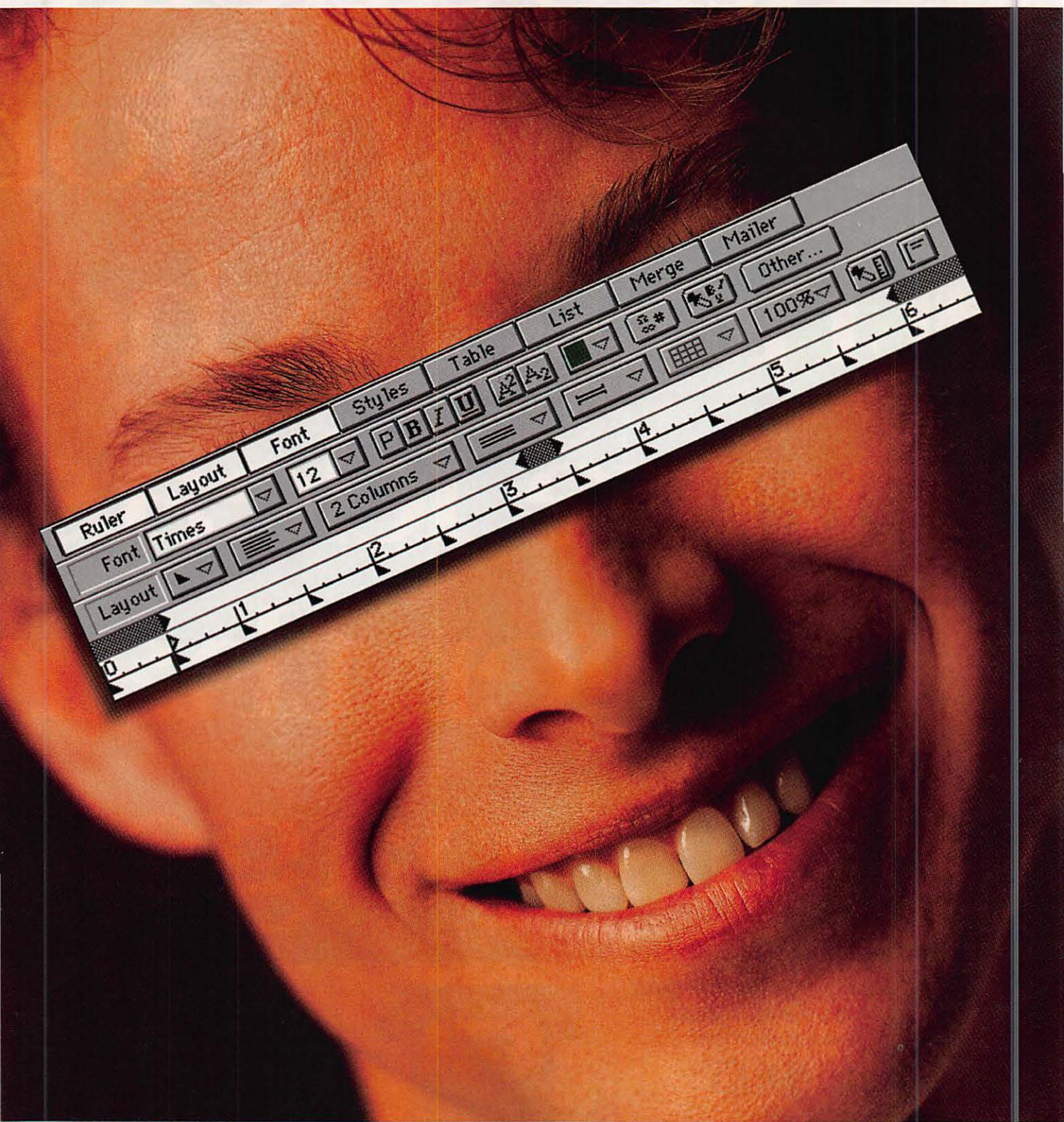


Go on. Give yourself room to think. With the HP DesignJet 650C/PS, you can now print in sizes up to 2′ by 9′ (up to 3′ by 9′ with our larger model**). Right in your office. Right away. No tiling. No hang-ups. No problem. Just clean, inkjet output with PANTONE®†-licensed colors. Adobe™ PostScript™ Level 2 software and a built-in RIP are included. For an output sample, call **1-800-354-7622, Ext. 8277.**

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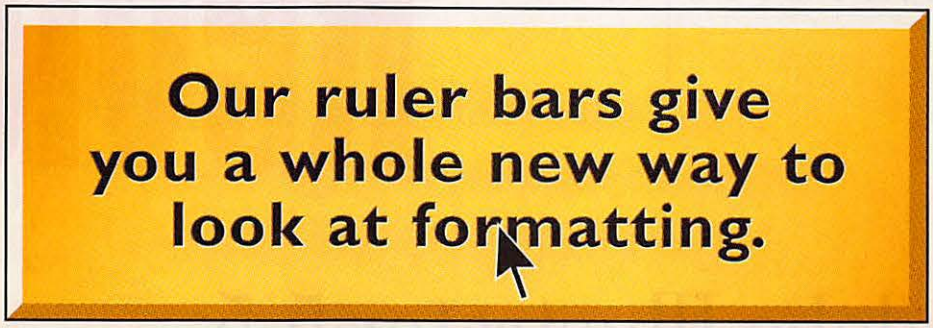
Circle 11 on reader service card

*Suggested U.S. list price. **Larger model lists at $11,695. †Pantone, Inc.'s check-standard trademark for color. Adobe and PostScript are trademarks of Adobe System Inc. which may be registered in certain jurisdictions. ©1994 Hewlett-Packard Company PE12410

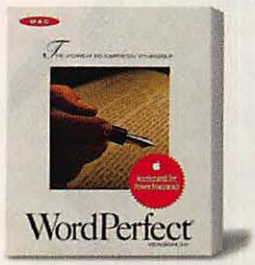


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Reviews

Adobe Illustrator 5.5

Draw Program

PROS: Flexible tab ruler; capable of opening and editing Acrobat PDF files; new object-by-object trapping capability; improved printing of gradations. **CONS:** Badly implemented rows-and-columns filter; noticeably slower than FreeHand. **COMPANY:** Adobe Systems (415/961-4100). **LIST PRICE:** $595.

MW ★★★★



DOUGLAS FRASER

ADOBE AND ALDUS MAY BE in the midst of tying the connubial knot, but Illustrator and FreeHand—the companies' respective top draw programs—continue to duke it out. Illustrator version 5.5 includes improved text-formatting functions, new trapping filters, and support for Adobe Acrobat's PDF (Portable Document Format). The program is also native Power Mac.

Deep into Text Territory

Illustrator 5.5 still lacks FreeHand's clever page-setup functions, but formatting and text-editing have been enhanced. Take tabs, for example. Although FreeHand 4.0's support for tabs is comprehensive—including a unique wrapping tab stop that accommodates multiple lines of type per entry—the feature is marred by clumsy implementation. Every text block gets a large tab rule, and the placement of the ruler is fixed. By contrast, Illustrator's tab ruler is a free-floating palette that you can hide or move at will. To make alignment easier, Illustrator extends a vertical line from a tab stop as you move it. You can also snap tab stops to ruler increments and move multiple tab stops at the same time. And you can create free-form lists by wrapping tabbed text around paths.

You can divide a text block into regular rows and columns. As in FreeHand, you select a text block and specify the number of rows and columns, the height and width of the gutters between them, and the order in which the text flows (to the right or down). But you can't insert hairline rules between rows or columns, as in FreeHand, nor can you create rows and columns inside nonrectangular text blocks. Try the latter and Illustrator changes the shape of your text, even combining two linked text blocks into one. Another irritant is the Preview option, which displays the watch cursor—whether the preview is updating or not.

You can also divide a standard rectangle into rows and columns to create a custom grid. But this feature was less satisfactory than FreeHand's regular grid. Changing one value in the Rows & Columns dialog box causes at least one other value to change in kind. For example, if you enlarge the height of the rows in the grid, Illustrator reduces the height of the gutters to compensate. This is OK for text, but it's not OK for grids. Even if you do the math and figure out exactly how different values will work together, a bug forces row values to inexplicably change when you adjust column values; a value may change even if you merely enter the abbreviation *pt.* All in all, the filter is more hassle than it's worth.

In addition to searching and replacing words, version 5.5 lets you search and replace uses of fonts. For example, if a document includes Helvetica Black but you don't have that font installed, you can replace one or more instances of the font with Helvetica Bold. But this filter took a full half-minute—running on a Power Mac 7100—to provide access to the 200 fonts in my system.

You can automatically upgrade punctuation in your document. Besides inserting curly quotes, Illustrator 5.5 replaces triple hyphens with em dashes (doubles, with en dashes), and double spaces after periods with single spaces. Illustrator can replace strings of characters with single ligature and fraction characters included separately in Adobe Expert Collection fonts. Illustrator 5.5 also includes filters that check the spelling in your document and change the case of selected text.

Illustrator Looks Outward

Illustrator still wouldn't know a TIFF image if it came with a résumé and pedigree, but the program now imports PICT objects, such as Canvas drawings and Microsoft Excel charts. This enhancement pales, however, next to Illustrator 5.5's support for Acrobat PDF files. The Illustrator 5.5 package bundles both Acrobat Distiller and the PDF Writer driver, both of which can convert a document to a PDF file. If all printer fonts and images are available during PDF conversion, Illustrator is able to edit the text and graphic objects in the file.

Does it work? The process isn't foolproof, but it works surprisingly well. After printing a five-page Aldus PageMaker document to disk, I converted it to a PDF file using Distiller and opened it inside Illustrator 5.5. A dialog box let me browse the pages in the document, view thumbnail previews, and select and open a page. (Illustrator treats every page as a separate document.) I could access objects inside an EPS illustration that I had created in Illustrator 3.0 and imported into PageMaker. However, rather than interpreting text in continuous blocks, Illustrator treated each line of type as independent and even broke some lines into multiple objects. These breaks seemed to occur at points where I had kerned the text. This made editing tricky, but not a single letter was lost.

Printing and Pace

Illustrator 5.5 makes a respectable attempt at automated trapping. (FreeHand 3.0 let you assign spreads to all objects uniformly, but that was dropped from version 4.0.) A Pathfinder filter allows you to select an object set against a different-color background, specify the thickness of the trap, and even vary the proportions of the trap according to height and width. Illustrator then generates a new composite path filled with a mix of the colors from the background and foreground objects. However, you can't apply the filter to gradations, strokes, or placed images.

Illustrator's other printing improvements are equally practical. If you've had problems printing gradations to older PostScript Level 1 devices, you can select an option that describes gradations as object blends, much like those you get when saving a document to the Illustrator 3.0 format. This can dramatically slow the printing speed, but it beats buying a new printer. Illustrator 5.5 also provides new filters that let you control the overprinting of black ink, generate reports listing the fonts and imported images in a document, and change the halftone settings for an illustration. But you can't change the halftone settings for a single object as you can in FreeHand.

Predictably, Illustrator 5.5 runs two to three times as fast on a Power Mac as its predecessor does on a 680X0 machine. Documents with lots of text take a long time to redraw because of Illustrator's reliance on Adobe Type Manager. ATM 3.8, a native Power Mac version, will display text three to five times as fast.

Illustrator 5.5 performed slower than FreeHand in all but one Macworld Lab test; in one test, version 5.5 running on a Power Mac was slower than Illustrator 5.0 running on a Centris 650. Part of Illustrator's slowness was a function of our test files. Version 5.5 calculates bounding boxes more accurately than its predecessor, thereby preventing exported EPS files from clipping off thick strokes and mitered corners, but this takes lots more time. Since the majority of the objects in our drawing test file were stroked, Illustrator devoted a huge percentage of its redraw time to calculating bounding boxes, even in the artwork mode. If you rely mostly on unstroked objects, your illustrations will redraw more quickly.

But even taking into account the slight speed disappointments, Illustrator 5.5 is a bargain. For only $99 to registered 5.0 users—that's less than the $129 upgrade fee for the Power Mac version of FreeHand, which includes no new features—the Illustrator 5.5 package includes more than 200 tile patterns, 220 fonts, and the Acrobat Distiller and Exchange utilities. I for one wouldn't hesitate to upgrade.—DEKE McCLELLAND

Power Mac Update

Aldus FreeHand 4.0

System Requirements 680X0 Mac: 8MB of RAM, System 6.0.7, 20MB of hard drive space. Power Mac: 8MB of RAM (16MB recommended), System 7.1.2, 25MB of hard drive space.
List Price The suggested retail price is $595. Registered FreeHand 4.0 users can get a Power Mac version from Aldus for $129. Registered users can upgrade from previous versions of FreeHand for $249.
Company Aldus Corporation (800/685-3543).

This new, recompiled version of FreeHand 4.0 for Power Macintosh has the same feature set as the current 680X0 version and operates identically. Speeds for FreeHand are included in the table "Power Mac Versions of Illustrator and FreeHand" (below).

Power Mac Versions of Illustrator and FreeHand

MW LAB

Best result in test. Shorter bars are better.

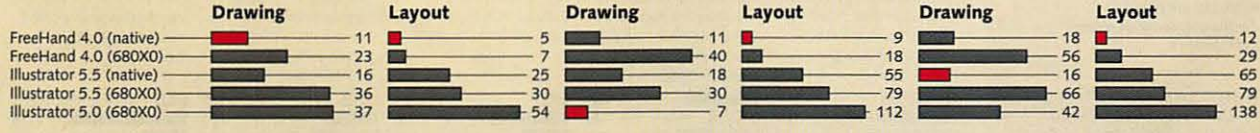
SCREEN REDRAW

We performed a variety of zooming and scrolling tests in the Preview mode to determine how quickly the program would redraw the entire document.

ARTWORK/KEYLINE TASKS

These results show how efficiently the programs moved, scaled, and rotated objects and then redrew the affected portions of the screen. Illustrator calculated the tasks faster than FreeHand did, which is apparent in Artwork/Keyline Tasks (where screen redraw is not a factor). In Preview Tasks, FreeHand's faster screen redraw more than made up the difference.

PREVIEW TASKS



BEHIND OUR TESTS

We tested how FreeHand and Illustrator handled two different kinds of documents. The first was a color drawing filled with gradations, object blends, tile patterns, masks, text on a curve, and complicated paths. The second document was a page layout with linked text blocks, display type, and a placed color EPS (300-dpi) image. We tested on a Centris 650 with 16MB of memory in 8-bit color mode and on a Power Macintosh 7100/66 with 24MB of memory in 8-bit color mode.—**Macworld Lab testing supervised by Lauren Black**

Color StyleWriter Pro

Color Printer

PROS: Fast, sharp, clean output. **CONS:** Network connection affects host machine; text not as sharp as DeskWriter 560C's.

COMPANY: Apple Computer (408/996-1010).

COMPANY'S ESTIMATED PRICE: $629.

MW ★★★★

UNTIL RECENTLY, THE HEWLETT-Packard DeskWriter C was the only choice among low-cost color printers for most Macintosh users. The Apple Color StyleWriter Pro not only prints faster than the DeskWriter, the Pro has better-looking printouts, and it has some good features that are missing from the DeskWriter 560C.

The Apple Color StyleWriter Pro uses the same engine as the Canon BJC-600, a printer that received rave reviews from many PC magazines. It has a maximum print speed of 2 pages per minute and a print resolution of 360 dpi in best mode (180 dpi in draft mode). The paper tray supports up to 100 sheets of paper, 20 sheets of transparency film, glossy or coated paper, or 15 envelopes; and supports a print size of up to A4, an international format.

One of the printer's best features is how it handles the ink. The ink comes in individual cartridges for each color, and they are extremely easy to replace. This approach has a distinct advantage over Hewlett-Packard's one-cartridge–three-color approach.

Let's say you use up all of the magenta ink first. With the Apple Color StyleWriter Pro, you need to replace only the magenta cartridge (around $9). The HP DeskWriter 560C, on the other hand, requires that you replace the whole cartridge (over $30) even if you have plenty of cyan and yellow ink left. Also, since the StyleWriter Pro's ink cartridges are transparent, you can estimate how many more pages you can print. The DeskWriter gives no indication you are running out of ink.

Like most Apple Color imaging products, the Apple Color StyleWriter Pro comes with ColorSync, a color-matching extension that helps the output colors closely match the colors you see on the monitor. But for most purposes, Macworld Lab has discovered that color matching is unnecessary.

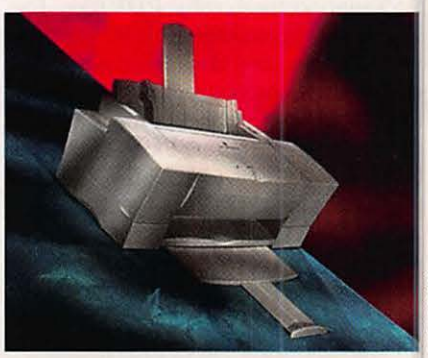
Like the black-and-white StyleWriter, the StyleWriter Pro can be shared on a network through a host machine. ColorShare allows users on the network to access the printer through the CPU the printer is hooked up to. Since the CPU does the processing, the host machine may encounter a slight performance degradation. I tried printing to a Color StyleWriter that was shared through a Power Macintosh 7100/66, and I noticed no performance hit on the 7100. When a IIci was the host, I noticed occasional pauses on the IIci.

The Hewlett-Packard 560C supports a direct LocalTalk connection, which is a lot more convenient than the Apple Color StyleWriter Pro's approach. On the other hand, the Color StyleWriter Pro can be shared on an EtherTalk network through a host machine, while the DeskWriter 560C requires a network router.

To determine the quality of the printouts, we assembled a panel of 12 *Macworld* editors and graphic designers to compare the output of the Color StyleWriter Pro to that of the DeskWriter 560C. The Color StyleWriter Pro scored a little bit better than the DeskWriter 560C in almost all of the categories except text. The Color StyleWriter Pro output is more vivid, more saturated, and sharper than the DeskWriter's. I noticed some banding on the Color StyleWriter Pro for documents printed with the normal quality and faster halftoning options selected. When a better halftoning method was selected, the banding problem disappeared.

The Color StyleWriter Pro didn't compare quite as well in the text output. Due to a higher resolution (600 by 300 dpi) for text, the Hewlett-Packard DeskWriter 560C definitely printed sharper characters. However, ink from the DeskWriter tends to splatter around the text. The Apple Color StyleWriter Pro uses fast-drying ink that is less prone to splattering. And speaking of text, the Color StyleWriter Pro ships with 64 fonts, while the 560C ships with 35.

I also noticed that the Color StyleWriter Pro's printouts don't wrinkle



ROBERT PERRY

as much as the DeskWriter 560C's, again because of the faster-drying ink. The transparencies that the Color StyleWriter Pro creates are less prone to fingerprints, and the ink of the transparencies is harder to scratch off than that of the DeskWriter 560C.

The Color StyleWriter Pro is not only a better printer than its predecessor, but it also holds the edge against its archrival, the Hewlett-Packard DeskWriter 560C. No longer is an Apple color ink-jet a ho-hum printer in the color printer field; the new Apple Color StyleWriter Pro now represents one of the best values in the inexpensive color-printer market.—MARK HURLOW

MW LAB How Fast Is the Apple Color StyleWriter Pro?

Best result for each test. Times are in seconds. Shorter bars are better. Products are listed in decreasing order of overall performance.

	PostScript Graphic Print speed for a FreeHand illustration that includes special PostScript effects, such as nonlinear blends and Bézier curves.	Object-Oriented Graphic Print speed for a complex MacDraw Pro document containing more than 840 color objects, most of them gradient-filled.	Photoshop RGB Using Plug-in Print speed for a 7MB, 200-dpi, RGB Photoshop file using the printer's driver.	Page-Layout Document Print speed for a 4-page PageMaker newsletter with several fonts, a PostScript graphic, a PICT file, and a color TIFF file.	Presentation-Graphic Transparency Print speed for a PowerPoint transparency with gradient background and color TrueType text.
Apple Color StyleWriter Pro *(normal*)*	402	667	227	523	301
HP DeskWriter 560C *(normal)*	425	441	540	811	1128
Apple Color StyleWriter Pro *(best**)*	499	736	328	1014	436
Canon BJC-820***	618	1109	385	1906	371
HP DeskWriter 560C *(best**)*	763	547	882	1419	1075

**Normal mode uses a pattern dither. **Best mode uses a scatter dither. ***Only one mode available.*

IntelliDraw 2.0

Draw Program

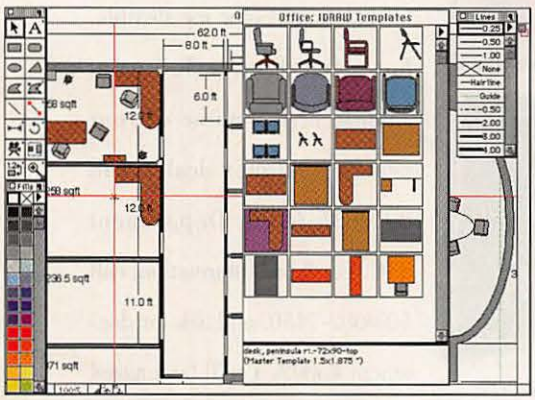
PROS: "Smart" tools; versatile feature set; approachable environment. **CONS:** Lacks a pen tool; unconventional Bézier curves. **COMPANY:** Aldus Consumer Division (619/558-6000). **LIST PRICE:** $129.

MW ★★★★

INTELLIDRAW GETS ITS NAME FROM its "smart" tools that automate drawing functions. However, IntelliDraw also flows text over linked columns, giving it basic page-layout capability. It creates multipage documents from editable master pages, produces animated effects, and incorporates QuickTime support, making it a highly competent presentation tool as well.

Foremost among IntelliDraw's innovative tools are the Symmetrigon and Connectigon. The Symmetrigon produces perfectly symmetrical objects by establishing an axis and mirroring the shape being drawn. The Connectigon builds elastic objects that attach to the control handles of standard objects and automatically reshape themselves when the standard objects are edited or moved.

IntelliDraw also has connectors that can lock objects to each other at specific distances and angles, or stretch to retain the connection when objects are moved.



IDraw, You Draw IDraw templates give IntelliDraw 2.0 a versatile object library capability.

You can align and distribute objects on the page with organizing frames that will maintain the relationships you establish, as well as automatically reconfigure the layout if objects are subsequently added or deleted from the frame. In addition, objects can be dynamically linked so that if you alter the dimensions of one, the others rescale automatically.

IntelliDraw includes a shape-blending function that connects individual shapes into flowing forms. For example, several airfoil shapes could produce a representation of an aircraft wing.

With IntelliDraw 2.0 you can also produce polymorphic shape blends. However, polymorphic blends are not just static combinations. IntelliDraw 2.0 can meld multiple shapes over a sequence of user-defined steps to produce an editable composite that retains all the steps of its transformation. A slider control attached to the blended shape itself lets you step through the stages of morphing. And fills applied to the original objects are also blended in sequence for chameleon-like effects. When combined with IntelliDraw's animation function, polymorphic blending can produce complex sequences, such as transforming a flower from bud to blossom.

IntelliDraw 2.0 offers new warping and perspective effects that, for example, easily let you reshape an object's duplicate into a distorted shadow. However, apply the shadow's fill before you distort the object. After warping, a fill affects only the bounding area around the shape, not the shape itself. IntelliDraw 2.0 can handle simple drafting chores. You can distribute a group of objects along a path defined by another object. Or you can attach a series of duplicate objects to another object. For example, on an illustration of a machine part, you could quickly position screw holes along a circle. And IntelliDraw 2.0 provides associative dimensioning tools that recalibrate themselves when the dimensioned object is edited and remain attached when the object is moved.

IntelliDraw 2.0 still relies on its polyshape tool to produce Béziers, and they still behave differently than in other illustration programs. However, IntelliDraw's Béziers are easy to create and manipulate. And the program now lets you split and rejoin curved segments, making its Béziers more appealing to graphic artists.

General text handling has been improved with better controls for kerning and for justifying character and word spacing. A spelling checker and hyphenation dictionary have been added as well. Also, IntelliDraw 2.0 can place text along a curve. Text is applied as an object group along the selected path and remains editable after placement.

IntelliDraw 2.0 also introduces IDraw templates, a nicely implemented rendition of object libraries. IDraw templates can be anything from page masters for presentation documents to clip art objects. You can open as many libraries as memory permits, each with its own drag-and-drop, multiple-thumbnail window, and save user-created objects to new IDraw template libraries.

IntelliDraw is not perfect. It still lacks a pen tool for graphic artists, and curved objects with offline control points don't mesh properly with Connectigon shapes. But such criticisms are relatively minor.

IntelliDraw 2.0 works well, does a great job of automating drawing tasks, and is straightforward in character. Despite its breadth of features, the program always feels approachable. All in all, IntelliDraw 2.0 is a wonderful general-purpose graphics package.

—CARLOS DOMINGO MARTINEZ

Power Mac Update

Infini-D 2.6

System Requirements 680X0 Mac: 8MB of RAM; System 7.0; 5MB of hard drive space. Power Mac: 8MB of RAM; System 7.0; 5MB of hard drive space.
List Price $695; upgrade from version 2.5 $49 (plus shipping and handling) for registered users.
Company Specular International (413/253-3100).

MW LAB **Rendering Times**

Antialias Setting	Power Mac 7100/66	Centris 650
None	95.8	379.8
Medium	570.9	2424.0

Time to render an 80K model (in seconds).

Infini-D 2.6 comes packaged in a single box with a smart installer that determines the machine's type and installs either the 680X0-based Macintosh version or the Power Macintosh version. There are no functional differences between the two versions.

Macworld Lab performed a basic rendering using a typical real-world drawing. These tests were performed on a Power Macintosh 7100/66 with 24MB of RAM and a 250MB hard drive. For comparison purposes we used a Centris 650 with 24MB of RAM and a 230MB hard drive.—LAUREN BLACK



Now isn't it time you got the big box of crayons?

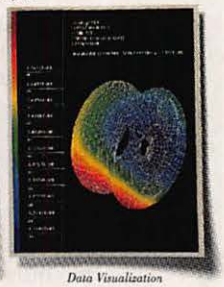
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Macromedia Director 4.0

Multimedia/Animation Program

PROS: More logical interface; improved documentation; immediate compilation of code; cross-platform compatibility; new run-time production option; better memory management. **CONS:** Less recognizable thumbnail previews; expensive. **COMPANY:** Macromedia (415/252-2000). **LIST PRICE:** $1195.

MW ★★★★

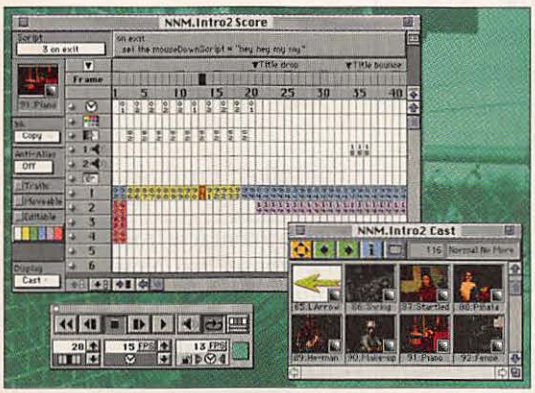
MACROMEDIA DIRECTOR HAS LONG been one of the most powerful applications for creating multimedia productions. Its wide array of authoring tools let you create navigation buttons, introduce sounds in the middle of frames, provide full-blown interactivity, and so on. But this power comes at a price. Not only do you have to fork over a sizable chunk of cash—its cost nearly doubled between 1.0 and 3.1—but Director has been one of the Mac's most daunting programs to learn. Version 4.0 represents a significant change for the better. The price of the program remains unchanged—hey, at least it didn't go up again—but the interface has been revised significantly.

A Kinder, Gentler Director

Work in Director still revolves around the Score window, an unfriendly but functional matrix of frames and channels that looks like a spreadsheet, complete with numeric values. Each cell represents the contents of a frame at a specific point in time. The number inside the cell is the address of a transition effect, sound, graphic, or other element inside the frame. Rather than bagging this solution—once you come to terms with it, it is quite efficient—in Director 4.0, the window makes more sense. New options let you send elements backward and forward, and change the colors of cells to distinguish them. You can also drag the contents of selected cells and drop them into new cells. Other options available in previous versions of Director are now more clearly labeled, obvious in purpose (the script editor button, for example, now looks like a button instead of an option box), and better documented.

The Cast window, which stores elements that you use in your production, has seen even more improvement than the Score window. The old, completely nonstandard navigation controls have been replaced by a conventional scroll bar and two arrow icons for jumping from one available cast member to the next. Also, rather than labeling cast members according to a base-8 system of letters and numbers, Director 4.0 assigns each cast member a standard base-10 number and allows you to assign a text label of your own. In previous versions, you could drag a cast member and drop it into the Stage (the representation of the active frame in the production). Now you can drop an element directly into the Score window, allowing you to place the element inside any frame or channel.

All is not perfect in the new interface, however. For one thing, Director 4.0 enlarges the previews but abandons dithering. As a result, the previews are not satisfactorily recognizable. In the Stage, there's no provision for selecting elements in front of or behind elements that are already selected. And the Paint window needs to be either significantly enhanced or relegated to a separate module so users can throw it away and use Adobe Photoshop. The Paint window provides only the most basic collection of tools, and it doesn't even let you edit 256-color images when your monitor is set to 16-bit color or higher.



The New Facade The revised Score and Cast windows make working in Macromedia Director a more pleasurable and straightforward experience. The controls are more logical and easier to access. The only detractions are the enlarged previews, which are barely recognizable.

New Ways to Speak the Lingo

In Director 4.0, scripts are now automatically placed in the Cast window, making them easier to access and edit. However, when you edit a script in the Cast window, you change all occurrences of that script. This is a change from Director 3.1, which created a revised copy of the edited script. It's ultimately a change for the better—allowing you to make global changes to many portions of a production at once—but experienced users will need to be careful.

Director 4.0 now compiles Lingo scripts immediately after you write them, and it automatically checks for accurate syntax; you no longer have to replay the production to make sure the code flies. Automatic compilation also dramatically increases the speed at which Lingo scripts are processed. Math operations, for example, play as much as four times faster.

Among Lingo's new functions is the ability to play one Director production inside another. This process, although not straightforward, lets you create production modules that you can switch in and out, allowing you to update a kiosk or other large-scale production without replacing any files. Director 4.0 ships with an excellent example of a production that plays ten other Director productions, so you can examine how the process works.

Director and the Real World

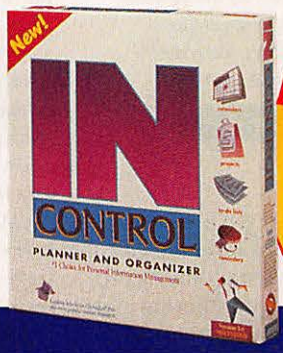
Director productions created on the Mac will reputedly be ready to run on Microsoft Windows as soon as a Windows version of Director 4.0 ships, which should happen in the fall. In the meantime, Director 4.0 provides the Save and Compact command, which optimizes a production for playback on CD-ROM; and the Create Projector command, which creates a run-time version of the production. Besides the fact that the old Player utility is no longer needed, the beauty of projector files is that users can't open and manipulate them within Director or any other program.

A few of the program's enhancements are geared toward very large productions. Director 4.0 can accommodate a whopping 32,000 cast members, up from the previous limit of 512, and up to 48 channels in a production, twice as many as previously. And most important, a single production file can be larger than 16MB. You can also speed up performance by specifying how Director purges cast members from memory.

Director 4.0 is an admirable upgrade, one that increases the power of the program and improves the interface as well. The program remains far from easy to use, and its cost is sufficiently high to ward off casual users. But multimedia professionals and longtime Director enthusiasts will continue to find it the best multimedia production package around.

—DEKE McCLELLAND

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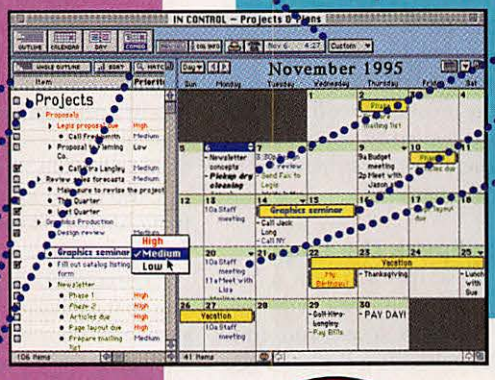
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DateBook & TouchBase Pro 4.0

Personal Information Manager

PROS: Excellent linking between contacts and calendar. **CONS:** Some bugs. **COMPANY:** Aldus Consumer Division (619/558-6000). **LIST PRICE:** $49.99 each; $89.99 bundled.

MW ★★★★

THE LATEST VERSIONS OF DateBook Pro and TouchBase Pro are easier to use and have many new features. More important, Aldus has improved the linking of data between the two programs, making the combination a potent PIM.

Under System 7, TouchBase and DateBook are dynamically linked; if you change information about a TouchBase contact that is linked to a DateBook calendar item, the contact information in DateBook reflects the change. As before, you can create a calendar event from TouchBase or a contact entry from DateBook; but now you can link items by simply dragging them from one program's windows to the other's.

As shipped, both programs are multiuser, so you can share your contact and schedule information over a network. The new version can also operate as a single-user program, which is speedier and takes up less space.

DateBook Pro 4.0

Aldus has refined many of DateBook Pro's features. You can now edit the icons that you place in the Month or Quarter views. There are dozens of icons for almost every occasion, from hearts for Valentine's Day to the skull and crossbones I use to indicate deadlines. Time bars, which indicate appointments graphically on an hourly grid, now include Summary text so you can identify an appointment without clicking on it. To-Do's have an In Progress choice in addition to the previous Pending and Completed selections. You can now set the font and size of banner text, and you can choose to have an event skip to the next business day.

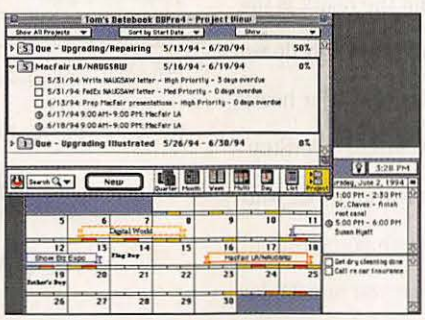
In the previous version of DateBook, there were two user-configurable pop-up menus at the bottom of the item-entry screen—one called Groups, the other, Categories. You could assign a calendar item to one Group (for example, Business) and another calendar item to one Category (say, Meeting). The new version consolidates Groups and Categories into one pop-up menu called Keywords.

Version 4.0 lets you attach documents from other programs to calendar items, and you can launch the attached documents from within DateBook Pro, thereby allowing you to organize documents from different programs related to a single project.

A real time-saver, the new Custom Items feature allows you to set up templates for any memo, to-do, or event that you do regularly. You predefine the item's attributes, then name and save it as a new Custom Item, which then appears in the Custom Items menu. You can then enter a new item using that template. The Custom Item template could be an Event with a Summary field containing *Meet with Accountant*, set as a High Priority, and with the Keywords *Business* and *Meeting* linked to your accountant's TouchBase record, and your expense spreadsheet as an attached document. To set up the meeting, you simply click on the day in the calendar, choose the template, and fill in the time fields.

Another big feature added to DateBook Pro is Projects, a collection of calendar items grouped into folders within DateBook. The new Project view shows each project as a folder, with a summary line showing the percentage of the project completed and a triangular tab next to the folder. You can set up Project templates using Items, with preset intervals between items.

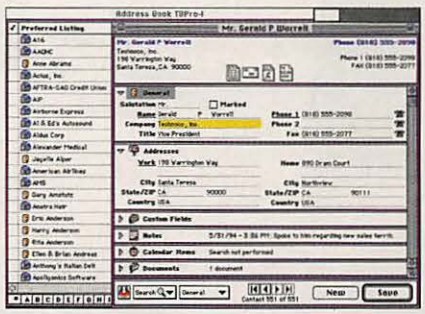
I found an annoying bug when I converted my old DateBook Pro calendar: the program did not always correctly convert the previous version's Groups and Categories information into multiple Keywords. Some, but not all, of my old entries were assigned incorrect Keywords, and others had their Keyword information set to None. The program also froze on two occasions when I had several applications open and was attempting to launch an attached document, but this did not occur consistently. Finally, speed of integration between the two programs is fine on a 68030- or 68040-based Mac, but users of older Macs may find it too slow.



Project Minder DateBook Pro's new Projects feature makes it easy to group several calendar items together and to check on their progress.

TouchBase Pro 4.0

TouchBase Pro now has separate windows for a list view and a detail view. There are now fields provided for two addresses (home and work) per contact, and you can choose a Preferred Listing by either name or company. The list view has alphabetical tabs that make it easy to display any part of the list. And contact information can be individually formatted according to a country's telephone or mailing requirements.



Dual Views at Last TouchBase Pro finally has separate list and detail windows, and the detail window is easier to work with.

The contact information has been consolidated into one scrollable list with several sections, each of which can be collapsed or expanded by clicking on the triangular tab. There is a Header; a General section containing the name, the company, and three phone numbers; Addresses; Custom Fields, with up to 16 configurable fields, including check-box, date, and number fields; Notes, which can hold up to 16K of time- and date-stamped notes; Calendar Items, which list the links from a contact to DateBook Pro; and Documents, a listing of the contacts' attached documents.

With their improved linking capabilities, these two programs compare favorably with all-in-one PIMs such as Attain's In Control and FIT Software's Full Contact. TouchBase Pro and DateBook Pro are chock-full of features, yet you can start with the basics and move on to advanced features like linking and projects as you become more familiar with them. The DateBook & TouchBase Pro Bundle gives you all the tools you need to organize your time and your contacts.

—TOM NEGRINO

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Emulations	*PCL5/Adobe® PostScript 2*	*PCL5E/Adobe PostScript 2*
40MHz Processor Upgrade	*Optional*	*Not Available*
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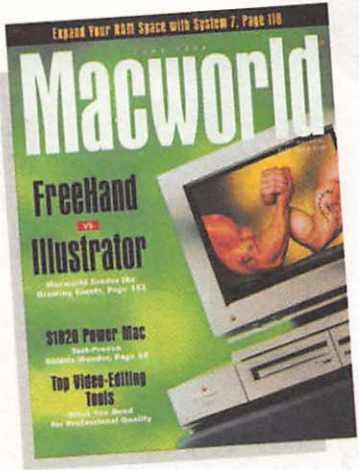
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Persuasion 3.0

Presentation Graphics Program

PROS: Improved tool palettes; extensive charting options; basic animation and hypertext functions. **CONS:** High memory and disk-space requirements; slow object linking; limited spelling checker; no support for dual slides.
COMPANY: Aldus Corporation (206/628-2320).
LIST PRICE: $339.

MW ★★★★

LONGTIME PERSUASION FANS SHOULD be forgiven for wondering if their favorite program was getting any attention from the folks at Aldus. In the two-and-a-half-year hiatus since Persuasion 2.1 appeared, older competitors like Microsoft's PowerPoint have gained ground, and new programs like Gold Disk's Astound—with its emphasis on live presentations and special effects—have entered the scene. In an effort to regain the lead, Aldus has released Persuasion 3.0, a major upgrade that offers users plenty of new features to cheer about, but not without a few disappointments.

The Price of Progress

If you're thinking about trading up, you may need more than the $150 upgrade fee. A complete installation consumes about 30MB of disk space, increased from 8.5MB. RAM requirements have also ballooned, with an allocation of at least 2.5MB for Persuasion alone. You'll need even more memory if you want to add tables and charts to your presentations, since those functions are now handled by separate applications, Aldus Chart and Aldus Table. It's practically impossible to run all three applications at the same time on an 8MB Mac.

Ironically, Aldus has chosen Microsoft's Object Linking and Embedding (OLE) extensions to let you plant charts and tables in your presentations. To create a graph, for example, you select Persuasion's chart tool and then click wherever you want the chart to appear on the slide. Aldus Chart launches automatically, giving you access to a surprisingly comprehensive array of charting options, including the familiar pie, bar, line, and scatterplot graph formats. Aldus Chart also gives you extensive interactive control over graphic elements like pie rotation, segmentation, and thickness, although support for shadowed text is notably absent. Aldus Table is less impressive, but it's a big improvement over Persuasion 2.1's table tools.

Unfortunately, all this functionality comes at a cost. In addition to the extra memory demands, linking objects into presentations can be frustratingly slow. On my Quadra 650, for example, it took almost ten seconds to transfer from Persuasion to Chart, even with both applications already loaded. On the plus side, though, Aldus's choice of OLE technology means that you can easily embed documents from other OLE-compliant applications like Microsoft Word and Excel into your presentations.

Familiar Territory

People who are already accustomed to Persuasion will find it easy to work with 3.0, even without reading the well-written manual. (Persuasion also includes a help function that lets you search for topics by keyword. Coverage tends to be scattered, though, forcing you to do a lot of navigating to cover a subject adequately.) Aldus provides 90 days of free support beginning with the first call; my questions were answered promptly and courteously by the tech-support staff.



Tools Galore Five floating palettes (text, tools, colors, object placement, and lines) let you access Persuasion's functions without using hierarchical menus.

A welcome change in Persuasion 3.0 is the use of floating palettes to replace the cumbersome hierarchical menus that plagued earlier versions (see "Tools Galore"). As much as I like Persuasion's new interface, though, I'd like to see Aldus add a customizable tool bar and a beefier set of drawing functions (a Bézier-curve tool would be a good addition, for example). Persuasion could also benefit from user-definable keyboard shortcuts.

Persuasion's new model for handling colors can be a bit confusing. Persuasion ships with six different master color sets, each containing 160 hues. Two other color sets can be customized to meet your needs. From each master set, you choose subsets of 20 shades that form the basic color scheme for your presentation. Once you get the hang of it, it's easy to change the color of all the titles or other presentation elements with a few mouse-clicks.

Live Video

Aldus has added several new features designed to enhance on-screen presentations. For example, you can designate any text or graphic object as an Autojump location so that the presentation skips to another slide or application when you click on it. Persuasion also includes simple animation tools that let you make objects or text move on or off the screen. Another useful feature called Autolayer automates the time-consuming process of creating a layered presentation, where each line or paragraph on a slide is highlighted in turn.

The player that Aldus bundles with Persuasion lets you distribute your slide shows. The player is more compact (609K versus 2.3MB), uses less memory, and runs slide shows more smoothly than the main application. It also does a good job of matching a presentation's colors to the display monitor. You can even annotate presentations while they're running. (Persuasion ships with players for both Macintosh and Windows machines.)

Missing in Action

After such a long wait, I was disappointed that Aldus didn't remedy some of Persuasion 2.1's shortcomings. For example, there is still no support for dual (left and right) slide presentations, a common requirement in educational and scientific circles. Persuasion's rudimentary spelling checker—an important feature when you consider how glaring spelling mistakes can be when projected larger than life—is as frustrating to use as ever. Finally, Persuasion still doesn't support rotated text, and saving presentations to disk often takes longer than it should.

Despite its problems, though, this new release brings Persuasion back into the presentation software mainstream. If you can spare the disk space and memory, and you don't mind the delays associated with linking charts and tables into your presentations, then you can consider Persuasion 3.0 a strong contender. It's also worth considering an upgrade if you're already using an earlier version.

—FRANKLIN N. TESSLER

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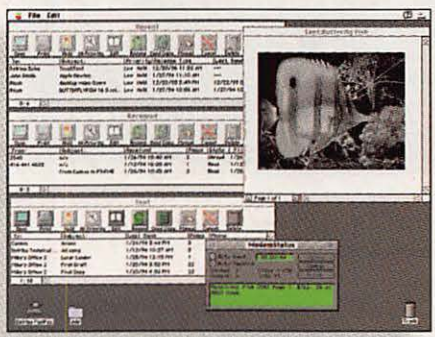
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FontChameleon 1.0.1

Font Utility

PROS: High-quality renditions of popular fonts; fonts can be customized; descriptor files are compact. **CONS:** No italics in current version (but will be offered soon). **COMPANY:** Ares Software Corporation (415/578-9090). **LIST PRICE:** $295.

MW ★★★★

IS IT BERKELEY OLDSTYLE, OR IS IT Ares Serif 13? You tell me. Look at the top pair of PostScript type samples in "Imitation of Type," and see if you can tell which is Adobe's ITC Berkeley Oldstyle Book and which is a font synthesized by Ares Software's FontChameleon. It's hard to tell one from the other.

FontChameleon introduces a new font-creation technology; it builds serif and sans serif fonts from a master outline file. These fonts are renditions of popular faces such as Avant Garde, Bookman, Futura, Garamond, Helvetica, Janson, Melior, Palatino, Times, Univers, and others. In most cases, a number of weights and styles are available (Ares currently offers 220 fonts from 50 families, and the company claims it will provide more in the future).

Font wizardry Font wizardry
Font wizardry Font wizardry
Font wizardry Font wizardry

Imitation of Type Compare the PostScript fonts generated by FontChameleon (right) to Adobe's versions of ITC Berkeley Oldstyle Book, Futura, and Galliard (top to bottom). You may see subtle variations, but for the most part FontChameleon creates faithful renditions of faces available from digital type vendors.

FontChameleon uses files called *font descriptors* to mold the master outline into the characters of the requested font design. Font descriptors are binary files, so you can move them between Macintosh, DOS, Windows, and Unix systems. FontChameleon uses the font descriptor and the master outline to generate a PostScript or TrueType font, which you can install and print just like a font from Adobe, Bitstream, or any other digital type vendor. Unlike a PostScript or TrueType font, which might be 40K or 50K in size, a font descriptor—essentially a "recipe" for creating a font from the master outline—takes up 5K or less, allowing you to fit hundreds of font descriptors on a floppy disk. If you want to send a document to an associate who owns FontChameleon, you can send the font descriptors—rather than the fonts themselves—along with the document, and your colleague can use his or her copy of FontChameleon to construct the necessary fonts. Such a scheme consumes less disk space and also saves time and money when you send files over a modem.

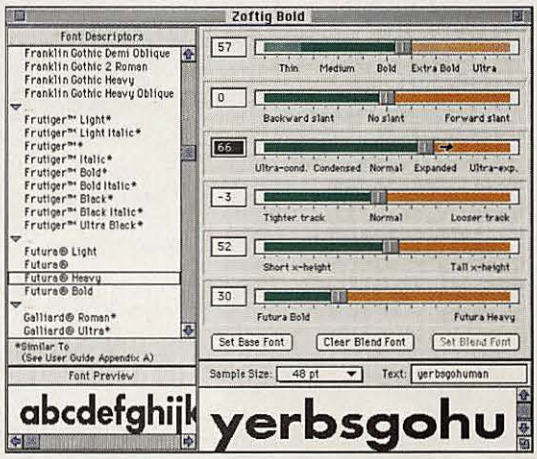
The fonts created by FontChameleon are compatible with Adobe's font metrics. You can assign Adobe Font Metrics (AFM) files to font descriptors, ensuring that documents created with FontChameleon fonts will have the same character spacing and line spacing as fonts in the Adobe Type Library. For example, if you create a document using FontChameleon's version of Melior and then print it at a service bureau that uses Adobe's Melior, the font metrics of the two documents will match.

You can use the set of font descriptors that comes with FontChameleon, or you can modify the descriptors to create custom fonts. The program lets you alter a character's weight, width, slant, x-height, and tracking and save the result as a new font descriptor (see "Building a Font"). You can also blend fonts to create hybrids, which can range from eye-catching novelties to aesthetic atrocities. If you're feeling creative, you can blend attributes from one font design into another; if you're of a more practical bent, you can blend weights within the same family to create, for example, a demibold weight. Unlike Adobe's Multiple Master fonts, which put some constraints on character manipulation, FontChameleon lets you condense or extend the heck out of fonts, such that you can create either misbegotten mutants that should never have seen the light of day, or art (depending on your point of view). According to an Ares representative, the company decided against limiting character manipulation and blending so that professional designers could have maximum flexibility—despite the potential for amateurs to run amok.

The fonts generated by FontChameleon are inexpensive (around $300 for 220 master font descriptors plus virtually unlimited style and weight variations), remarkably faithful to the original designs, compact, and portable across platforms. So what's the catch? There's really no catch—just a few limitations. FontChameleon's master outline, impressive though it may be, can be stretched and molded only so far; Cooper Black is about the limit of its stylistic versatility. If you want a more exotic design—or simply a face that isn't in the program's font-descriptor repertoire—you'll have to purchase a traditional PostScript or TrueType font. A more serious limitation is the lack of italics; FontChameleon includes obliqued versions of many of its sans serif fonts but doesn't provide italics for its serif fonts. Ares says it is addressing this limitation by revising the master outline to support true italics; an inexpensive upgrade will be available soon. As for other criticisms, the user interface is not always as simple as I like to see, although the program is generally easy to use and includes helpful tutorials. Also, you can't print font samples from within FontChameleon (though it has an on-screen preview), and the manual lacks an index.

If you want an inexpensive alternative to purchasing a large type library, try FontChameleon. Fifty high-quality font families for the price of two or three traditional families is a good buy (once the lack of italics is addressed). And professional designers and amateurs alike should enjoy the program's ability to customize fonts. Depending on your needs, FontChameleon can offer the right blend of practicality, economy, and creativity.

—ERFERT FENTON



Building a Font FontChameleon lets you create custom fonts by blending the attributes of two existing fonts (in this example, a bold and heavy weight from the same family) and altering factors such as width and x-height. You can then save the result in PostScript or TrueType format and install it just like any other font.

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Circle 237 on reader service card

PLI Infinity 270 Turbo

SyQuest Drive

PROS: Speedy performance; easy setup; small size suitable for use on the road. **CONS:** Incompatible with existing removable formats; lacks power-on light. **COMPANY:** Peripheral Land Inc. (510/657-2211). **LIST PRICE:** $651; formatted cartridges $59.

MW ★★★★

ON THE SURFACE, PLI'S NEW Infinity 270 Turbo seems the same as the older Infinity 105 Turbo (see *Reviews*, *Macworld*, September 1993). However, SyQuest has used such techniques as increasing information density and using smaller heads to allow its line of 3.5-inch cartridges to store much more data. The new SyQuest 270MB removable hard drive supplements, but doesn't replace, existing 105MB drives, and it reads from and writes to the older-style cartridges.

PLI's 270MB drive is only slightly wider than the cartridges themselves, about 2 inches high, and less than 8 inches long. There is no cooling fan, but there are ample vents for cooling the drive. When a cartridge is not in use, the unit is absolutely silent. The only way to know it's on, other than to look at the rear power switch, is to insert a cartridge and watch the activity light flash. A real power-on light would be nice. The drive uses an external power supply.

The rear panel is conventional, though everything is packed into a tighter space than with a standard-size drive case. PLI provides switchable termination (an advantage, I think), a convenient SCSI ID wheel, a pair of 50-pin SCSI jacks, and a power on/off switch. PLI's supplied Formatter 4.0 handles disk-preparation chores speedily and efficiently. An extension enables you to mount disks after your Macintosh starts up.

In day-to-day use, the new 270MB drive performs about as fast as the older 105MB model. SyQuest claims 13.5ms seek times and 21.8ms access times, which my informal tests confirmed. Read/write performance is comparable to that of a fixed drive of the same capacity. The cartridges themselves weigh less than 3 ounces but seem sturdy enough. I would not, however, subject them to the same sort of abuse that a Bernoulli or optical cartridge might tolerate. I did not put them through any severe abuse tests, such as dropping the cartridges or using them as Frisbee substitutes.

There are so many removable formats for disk drives available now, you might begin to feel dizzy at the prospect of selecting one. SyQuest drives come in five forms: 44MB, 88MB, and 200MB for 5.25-inch devices, and 105MB and 270MB in the 3.5-inch line. There are many different sizes of Bernoulli cartridges, 128MB and 230MB opticals, and more. In addition, prices have fallen tremendously in the fixed-drive market, and 1GB drives at less than a grand are fairly cost-competitive with some removable formats. However, at $59 each, 270MB SyQuest cartridges are in a class by themselves.

If you need to move large files from place to place, a removable drive may be a good investment for you. The PLI's diminutive size also makes it a good candidate for travel. I was able to easily slide the drive, its power supply, and cartridges into the side compartment of my PowerBook's carrying case.



RICHARD RETHEMEYER

When all is said and done, the PLI Infinity 270 Turbo SyQuest drive is a very good product: fast and reliable. The cost of the media is competitive with optical cartridges. The Infinity 270 Turbo's small size makes it an excellent traveling companion, and it is about as fast as comparably sized fixed hard drives. If compatibility with other devices and the possibility that drives of greater capacity might be coming along soon don't faze you, I recommend the product without hesitation. —GENE STEINBERG

PowerPrint 2.5

Print Utility

PROS: Compatible with wide variety of PC printers; includes print spooler; supports color and gray-scale printing. **CONS:** Doesn't support PostScript printing. **COMPANY:** GDT Softworks (604/291-9121). **LIST PRICE:** $149.

MW ★★★★

POWERPRINT IS AN INGENIOUS hardware-software combo that lets you print from your Mac to almost any PC printer. The newest version includes support for over 1000 printers, ranging from aging dot matrix models to the newer color ink-jet and laser printers.

On the hardware end, PowerPrint comes with a 6-foot-long serial-to-parallel converter cable. One end of the cable has an eight-pin connector that plugs into your Mac's modem or printer port. The other end connects to the Centronics parallel port available on most PC printers. (PowerPrint doesn't support connections to PC printers that are equipped with serial ports only—but there are relatively few of those.) The Centronics end of the cable assembly is equipped with a single LED, which has various flash patterns to indicate when the cable is receiving power, waiting for data, or encountering a problem with the printer.

The accompanying software consists of 18 drivers that provide a broad range of printer support. (If your disk space is limited, you can opt to install the Popular Printers Package, which places just 3 drivers on your hard drive. These 3 support 650 printers.)

The updated PowerPrint package includes drivers to support newer printers, such as the HP LaserJet 4L and the color DeskJet series. Also new in version 2.5: support for 32-bit color printing, gray-scale output on black-and-white printers, and a print preview function previously unavailable with certain drivers. (Owners of earlier versions of PowerPrint can upgrade for $35.)

Once the printer drivers are installed in your Mac's Extensions folder, you use PowerPrint by selecting the appropriate driver in the Chooser and then using the standard Page Setup and Print commands to set up print jobs. A HyperCard reference stack helps you figure out which drivers to use with various printers.

Setting up the hardware and software is pretty straightforward, although coming up with a successful configuration for

continues



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Circle 15 on reader service card

some printers may take a bit of experimentation. You also have to be attentive to your Mac's serial-port settings: if you're connecting via the printer port, AppleTalk must be inactive; PowerBook Duo users must connect via the modem port with AppleTalk turned off.

The printer drivers support a full range of LaserWriter-like options: you can print odd or even pages only, select automatic or manual paper feed, and reduce or enlarge printed output from 20 to 400 percent. The drivers also support Photocopy Reduction, which shrinks your pages and places the reduced image in the center of the page.

Many of the drivers add a number of more sophisticated printer-specific capabilities, too. The DeskJet 500c driver, for example, enables you to print at four lev-



Pick a Driver PowerPrint comes with a HyperCard-based Printer Reference Stack that helps you figure out which of the program's 18 printer drivers to use with a given printer. After selecting the manufacturer and model from the two lists, you click on the center button to find out which driver to use.

els of quality. It also provides four options for output to a color device—Black & White, Grayscale, 8 Color, or Full Color.

The package also comes with SpoolMaster, a well-designed print spooler that allows you to perform background printing with any of the PowerPrint drivers. If you bring SpoolMaster to the foreground during a print job, you can monitor the progress of the job or rearrange jobs in the print queue simply by dragging them into a new order.

Obviously, PowerPrint has its limits. It supports only QuickDraw output, which means it can't interpret the PostScript code used by most higher-end graphics programs (it does fine with PostScript fonts, however, as long as you're running Adobe Type Manager); and it doesn't work with some older PC printers whose only emulation mode is PostScript. But if you have access to a PC printer you'd like to use with your Mac, or if you have a PowerBook and want to be confident that you'll always be able to find a Mac-compatible printer on the road, PowerPrint is an ideal solution.

—JOSEPH SCHORR

MovieWorks 2.0.2

Multimedia Software

PROS: Includes tools for editing graphics, sound, and antialiased text; QuickTime-based. **CONS:** Slow and awkward; unstable; QuickTime-based. **COMPANY:** Interactive Solutions (415/377-0136). **LIST PRICE:** $295.

MW ★★

WHEN IT DEBUTED, MOVIEWORKS was buggy, sluggish, awkward, and difficult to use. It's now more powerful and less confusing, but it's still slow—and disturbingly unstable. The premise remains unchanged: MovieWorks is an all-in-one multimedia package that lets you create and edit media elements—sounds, pictures, and text—and then combine them with animation and special effects into a cohesive production.

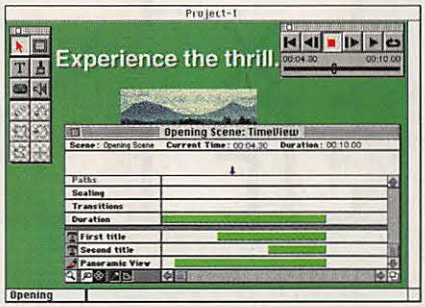
The package is a group of five separate applications. The MW Text, MW Paint, and MW Sound editors are programs that allow you to create graphics, antialiased text objects, and sound clips for use in a project. Composer is the integration tool you use to combine all the pieces, using a variety of transitional and animation effects. (You don't have to create all your media elements from scratch using the MovieWorks editors; Composer can import QuickTime movies, AIFF, and SND resource, as well as PICT, TIFF, and MacPaint graphics.) Finally, Player is a module for playing back run-time versions of your presentations. You can distribute Player free along with your finished projects.

Interactive Solutions has completely reworked, and substantially improved, the MovieWorks interface. Most notably, each segment of a project is now called a Scene instead of a Movie—thus eliminating the confusion of importing movies into movies to create movies—and the media elements you import into scenes are now called Objects rather than Tracks. The befuddling Mediabase window of version 1.1 has been replaced with two new windows—one displaying thumbnails of each scene, the other showing all the imported objects used in each scene. All of this makes the process of assembling a project a bit easier.

But much of the MovieWorks interface still needs improvement. For example, setting up the links, transitions, and attributes for each object in a scene involves navigating clumsily through a series of dialog boxes. And moving between the integrated modules takes too long. Using the Text application is particularly irritating; every time you want to add text to a scene, you must go to the Text program and create a new text object. (A built-in text tool in Composer would have been far more practical.) All of this, combined with the program's overall sluggishness, means you have to work too hard for too long to produce good results.

Also, because MovieWorks is QuickTime-based, it decompresses each scene in a project before playback. This reduces file sizes and allows for higher-quality playback on Macs with lower RAM configurations. However, it makes assembling even a basic multimedia production frustratingly slow. Each time you update a scene—or even a piece of a scene—you must recompress it before you can view it in real time.

MovieWorks sometimes gives you unpredictable results. In several of my projects, titles got mysteriously chopped off, and some disappeared completely. Colors were garbled during compression, and combining more than one or two media objects in a scene produced jerky, stuttering transitions and unsatisfactory animations. Although the MovieWorks modules are more stable now than they were in version 1.1, I still experienced freezes and unexpected quits when work-



Overview The TimeView window in MovieWorks displays all the media elements appearing within each scene along a graphical time line. You can drag and resize the bars to change the entrance, exit, and duration of each object in the scene.

ing with the Text, Paint, and Composer programs. Interactive Solutions acknowledged several of the problems, some of which were fixed with version 2.0.2. Others they anticipate fixing in version 2.0.3, which should be available soon.

With diligence you can get decent results with MovieWorks, and the Paint and Sound modules do have some genuinely good, sophisticated editing features. But there are other entry-level multimedia programs—for example, Gold Disk's Astound—that make leaping into multimedia production a lot easier and more rewarding.—JOSEPH SCHORR

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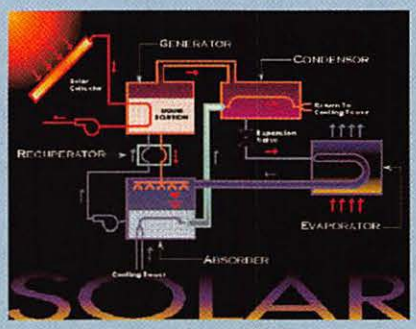
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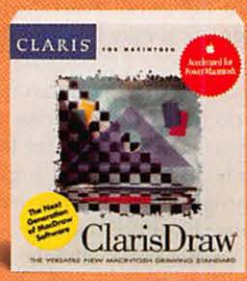






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P-Touch PC

Label Printer

PROS: Versatile; high-quality output; easy to set up and use. **CONS:** High cost per label; very weak manual. **COMPANY:** Brother International Corporation (908/356-8880, ext. 4307). **LIST PRICE:** $449.95.

MW ★★★

THE BROTHER P-TOUCH PC IS ONE of the best and most versatile label creators available. It consists of a small thermal printer, a connecting cable, and two programs: the P-Touch PC printer driver, which controls the actual printing, and P-Touch PC Editor, which creates the label text. The software suite also includes a comprehensive help file, several attractive fonts, and sample label formats. A disk with Windows software and the cable for connecting to a PC are also included.

The P-Touch PC is a 180-dpi thermal printer that connects to a serial port. It's quiet, fits in tight spaces, is a snap to set up, and works like a champ on the wide range of label tapes Brother sells. The printer's only real drawback is that there's too much space between the print head and the tape cutter, and so in balancing label margins the P-Touch wastes a bit of tape (about ½ to ¾ inch) for each label. That can be annoying and, in the long run, expensive.

The tapes range in width from ¼-inch to 1 inch and are 50 feet long. They come in cassettes that you just pop in and out of the printer. Color combinations range from basic black letters on white or clear tape, to black on a truly eye-catching fluorescent orange, with many options in between. All tapes have a clear laminated top coating and hold up well even in harsh and high-traffic environments. Brother will soon offer unlaminated label tape for envelopes or similar uses. The unlaminated labels will be cheaper than the laminated ones and will come in refillable cassettes.

The printer's street price is just over half its list, while the label cassettes sell from $25 to $50 each, depending on width and color combination. The great quality and the ease of creating the labels make the tape prices palatable.

The P-Touch PC printer driver is, as far as I can torture it, flawless. It works with P-Touch PC Editor exactly as advertised. It even works well with many other applications—just mind the warnings in the manual.

P-Touch PC Editor is merely OK. It does simple jobs well and gives you easy access to time and date stamps and a wide variety of bar codes (you type in text, and P-Touch prints correct and, far more important, readable bar codes). Editor handles TrueType fonts well and can handle PostScript if you have Adobe Type Manager installed. The manual is bad, explaining some features inadequately and failing to explain others at all. Fortunately, the software is simple enough that you can figure out much of its workings yourself.

Editor's database functions, which you use to create runs of mailing labels, for example, are limited, and I suspect are here mostly to make the product look good to reviewers. I recommend that you use your regular database or spreadsheet when printing a large quantity of labels.

The preview feature saves tape and is nice when it works correctly. Unfortunately, the readability of the preview depends on your selected type and font size. For example, if you use 12-point Geneva for mailing labels, previewing at 250 percent gives you true WYSIWYG display, while smaller percentages (including 100 percent) are not WYSIWYG at all; if you use something like 16-point Stone Informal, however, you get true WYSIWYG previews at 100 percent.



Labels on the Fly P-Touch PC Editor's simple interface is excellent for fast labeling—all the tools you need are just a mouse-click away.

Decide on a type size and font, learn what preview size is WYSIWYG, and stick to that. You can always print label proofs to your regular printer, but that works against the P-Touch PC's whole fast-and-easy-label concept.

Tech support is free, but you bear the cost of a call to southern California. The several times I called, I got right through to nice technicians who quickly supplied correct answers.

All complaints aside, I really like this printer and use it frequently. I'm even getting more organized.—STEVEN BOBKER

HyperCard 2.2

Authoring Tool

PROS: Inexpensive; powerful; many new multimedia extensions; AppleScript-compatible. **CONS:** Color tools are slow and poorly integrated. **COMPANY:** Apple Computer (408/996-1010). **COMPANY'S ESTIMATED PRICE:** $249.

MW ★★★

WITH ITS INTUITIVE STACK-OF-cards metaphor, simple graphics toolbox, point-and-click interface, and friendly scripting language, HyperCard made it possible back in 1987 for a beginner to create customized interactive software with minimal training and effort. HyperCard became a standard tool for building interactive presentations, tutorials, hypertext books, and multimedia documents. For longtime users, HyperCard 2.2 includes several welcome enhancements and a few disappointments.

Version 2.2 has new options for creating families of radio buttons, pop-up menus, dimmed (inactive) buttons, oval buttons, standard and default dialog-box buttons, and list fields. It's easier than ever to create a stack that has the look and feel of a modern Mac application. And with 2.2, it's possible to turn a finished stack into a stand-alone, double-clickable application that runs without HyperCard. You pay a price, though: a stand-alone application takes up about 700K more disk space, since it effectively has a copy of HyperCard built into it.

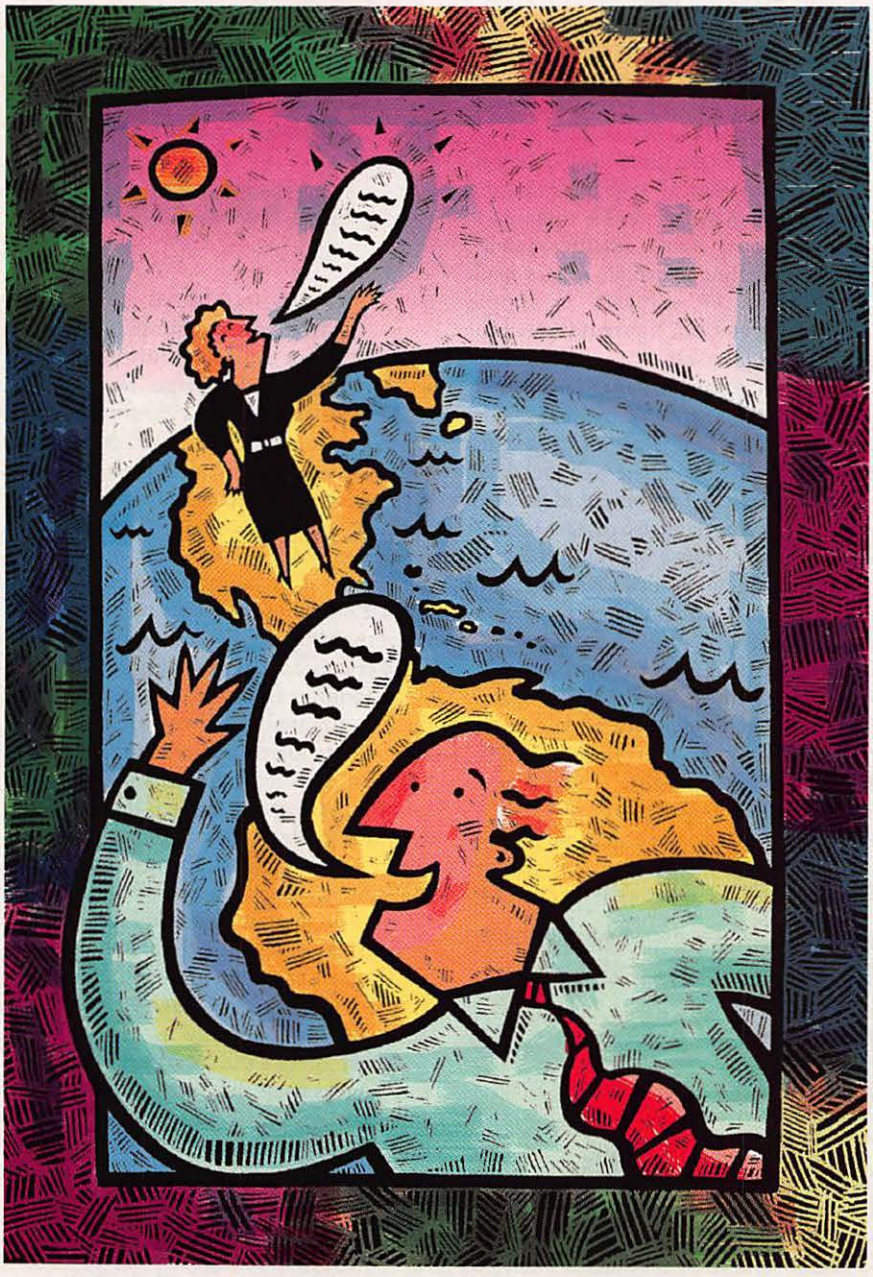
Then there's the speed issue: HyperCard stacks have always seemed sluggish compared with programs built with other programming tools. With today's faster Macs, HyperCard's speed is less of an issue. But even on a Quadra, HyperCard 2.2 isn't exactly hyperactive.

Except for a couple dozen new features and refinements, HyperTalk remains unchanged, so most stacks created with earlier versions will work under HyperCard 2.2, and version 2.2 stacks that don't use the new features can run with version 2.1. HyperCard 2.2 allows scripts created in the included AppleScript, as well as other OSA-compatible languages, to mix with HyperTalk scripts in a stack, so the stack can communicate with FileMaker Pro, Excel, and other scriptable applications. HyperCard 2.2 is also compatible with WorldScript, so it's easier to convert stacks to different languages and character sets.

continues

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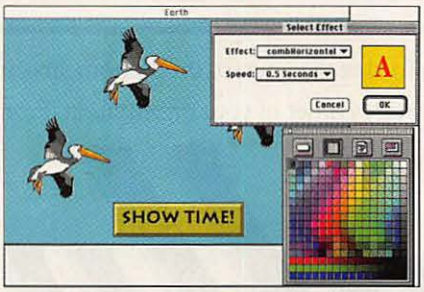
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Probably the biggest complaint about HyperCard has been its lack of color. HyperCard was designed with the original black-and-white Mac screen in mind. Version 2.2 still looks, at first glance, like a refugee from the MacPaint era, with basic paint, button, and field tools. But a new Color Tools stack makes it easy to colorize buttons, fields, cards, and backgrounds, and you can now include color drawings, paintings, and scanned images in stacks without scripting. Still, color can slow a stack's response time, and a colorized stack requires a bigger memory partition. If you move a button while a card is visible, the associated color patch doesn't move with it. Also, color images aren't visible in the Recent dialog box, and HyperCard's black-and-white visual effects don't work in colorized stacks. It's easy to attach color-transition effects, but they are less versatile than their monochrome counterparts.



Beyond Black and White The Color Tools stack lets you colorize buttons, fields, and rectangles; import color pictures; and add color-transition effects.

The HyperCard 2.2 package also includes QuickTime Tools (for adding video to stacks) and AddMotion II—Motion Works' add-on that includes a color paint module, sophisticated animation tools, and a versatile sound editor. With Color Tools, QuickTime Tools, and AddMotion II installed, HyperCard includes most, if not all, of the features multimedia authors need. Unfortunately, working with this patchwork of HyperCard extensions feels a little like juggling several remote-control devices to control your stereo system. Still, HyperCard's extensibility is one of its biggest strengths. If HyperCard can't do something by itself, there's a good chance somebody has written a shareware XCMD (external command) to do it.

In the crowded world of authoring tools, HyperCard strikes a good balance between power and ease of use, and its price is reasonable. If you're using a previous version of HyperCard, the upgrade is a good investment. It may not satisfy all your wishes, but it should keep you happily building stacks until the next version comes along.—GEORGE BEEKMAN

Dynodex for Macintosh 3.5

Contact Manager

PROS: Improved printing; Dynofind feature makes contacts accessible from all applications; links to Dyno Notepad. **CONS:** No current link to a calendar program.
COMPANY: Portfolio Software (802/434-6400). **LIST PRICE:** $69.95.

MW ★★★

PORTFOLIO SOFTWARE'S LATEST version of Dynodex has a few new features, improved performance, and an easier-to-use interface.

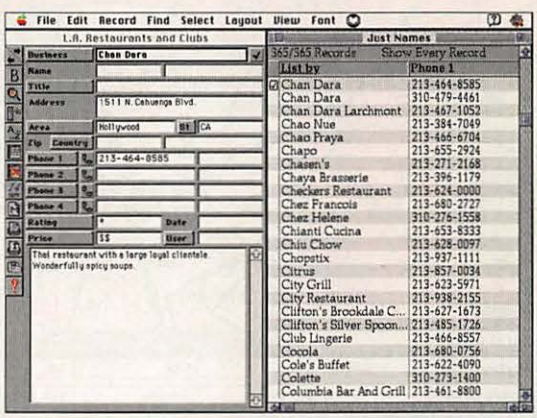
Dynodex was the first contact manager capable of printing double-sided pages for the popular day-planner formats, such as Filofax, Day Runner, and Day-Timer. Version 3.5 has made printing even easier by consolidating several commands into the Page Setup and Print dialog boxes, and by significantly speeding up the printing process. The Field Setup and Form Setup windows now give you WYSIWYG previews of a contact record and a page. Field labels in the entry window can be renamed, and you can change the font and style of both the fields and their labels.

A welcome change is the ability to print names and phone numbers from the Just Names window. You can now specify the font and text size and resize and rearrange the columns. Background color has been added to alternating lines for easier reading.

Dynofind is Portfolio's implementation of an idea that first appeared in Now Software's Now Contact. Dynofind is a control panel that places an extra menu in all applications; the menu contains the names and main phone numbers of your frequently used contacts. Searching your Dynodex file with Dynofind is fast and easy. You first enter the name in the Dynofind search dialog box (accessible through the Dynofind menu or via a user-configurable hot key). The Dynofind dialog box appears with the contact's information, along with buttons to dial any of the contact's four possible phone numbers. The Copy Label button copies the contact's name and address for letterheads or envelopes to the Clipboard; the Add to Menu button adds the contact and whichever one of the four phone numbers you choose to the Dynofind menu. The next time you want to call that contact, you can bypass the search dialog box and dial the contact by holding down the ⌘ key while choosing the contact from the Dynofind menu. Dynofind is very convenient for quick lookups, dialing the telephone, and pasting addresses into letters.

A button on the Dynodex 3.5's entry screen links to Portfolio's Dyno Notepad. This outline processor and to-do–list manager was previously marketed by Symmetry Corporation as Acta 7. When you click on the link button, Dyno Notepad launches and creates a new outline document titled with the name of the current contact. If you have previously created an outline for the contact, clicking on the Link button launches Dyno Notepad, opens the outline, and creates a new outline topic—date- and time-stamped and ready for note-taking. Dynodex also has a link to Portfolio's forthcoming calendar product, promised for the second half of 1994.

Dynodex 3.5 is an excellent contact manager. It compares very well to Now Contact and Aldus Consumer Division's TouchBase Pro. In fact, these programs have similar features, so much so that your buying decision may be more a matter of preference than functionality. Dynodex, however, lacks a companion calendar program, which the other products offer. This integration of contacts and activities is now the norm, not the exception, and no company can afford to ignore that fact. Until Portfolio delivers on its calendar program, Dynodex will offer only half a solution.—TOM NEGRINO



Easy on the Eyes Dynodex 3.5 lets you customize the display for easier reading. I've changed the font and size of text in the Just Names window, while leaving the entry window in the default Geneva font. Note the icon for the Dynofind menu next to the Font menu.

Think

Making sense of the amount of data flowing into your company is like trying to drink from a fire hose. You need a better way to correlate it. To think about it. To interpret it. To visualize it. To form a comprehensive picture of what it really means.

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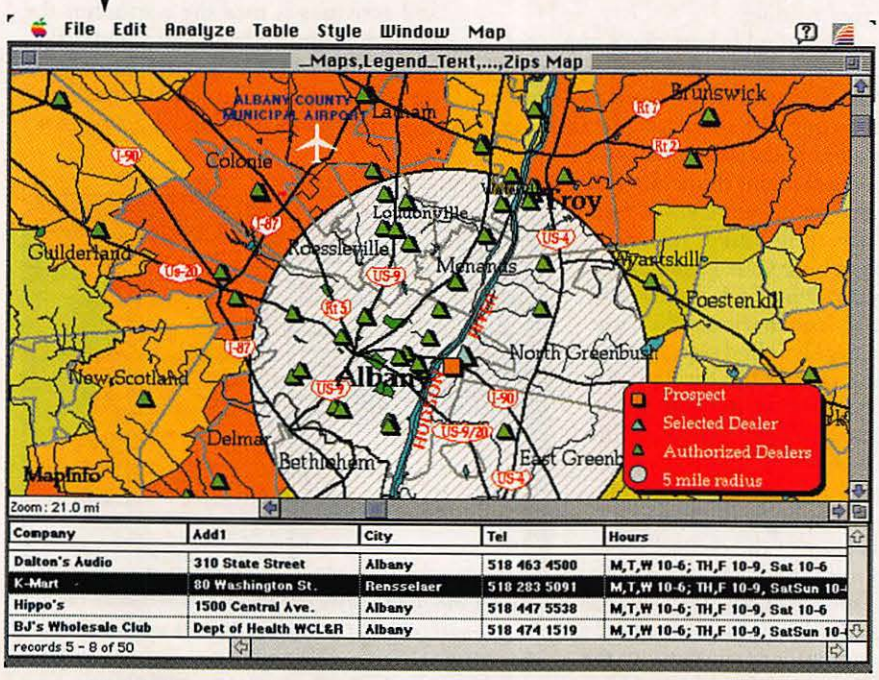
	COMPANY	ADD1	CITY	TEL	HOURS
1	Macy's	Clifton Center, Wolf Rd.	Albany	555-3865	M,T,W 10-6; Th-Fr 10-9
2	Audio Lab	298 Congress St.	Troy	555-2860	M,T,W 10-6; Th-Fr 10-9
3	Radio Shack	110 Watervliet Ave.	Watervliet	555-1125	M,T,W 10-6; Th-Fr 10-9
4	Lechmere	89 Federal Way	Albany	555-7927	M,T,W 10-6; Th-Fr 10-9
5	Dalton's Audio	310 State Street	Albany	555-4500	M,T,W 10-6; Th-Fr 10-9
6	B.J.'s Wholesale	97 Third St	East Greenbush	555-5091	M,T,W 10-6; Th-Fr 10-9
7	Hippo's	1500 Central Ave.	Albany	555-5538	M,T,W 10-6; Th-Fr 10-9
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9	Elmere	Village Plaza, Rt. 146	Schenectady	555-9047	M,T,W 10-6; Th-Fr 10-9
10	Ernest's Stereo	76 O'Brien Way	Loudonville	555-4230	M,T,W 10-6; Th-Fr 10-9
11	Calder's	1423 Heath St.	Albany	555-1987	M,T,W 10-6; Th-Fr 10-9
12	Coco's	Northern Plaza, Rt. 152	Albany	555-2921	M,T,W 10-6; Th-Fr 10-9
13	Belton Stereos	150 State Street	Troy	555-1473	M,T,W 10-6; Th-Fr 10-9
14	Concord Audio	1999 Railroad Ave.	Albany	555-0200	M,T,W 10-6; Th-Fr 10-9
15	Radio Shack	872 Johnson St	Watervliet	555-0711	M,T,W 10-6; Th-Fr 10-9
16	K-Mart	89 Albany Street	Albany	555-2205	M,T,W 10-6; Th-Fr 10-9
17	Hippo's	45 Wadsworth Circle	Menands	555-6099	M,T,W 10-6; Th-Fr 10-9
18	Sam's Club	870 Central Ave.	Albany	555-3155	M,T,W 10-6; Th-Fr 10-9
19	Audio Lab II	1145 Lawler Ave.	Albany	555-8049	M,T,W 10-6; Th-Fr 10-9
20	Wilton Stereo	189 Central Ave	Albany	555-4995	M,T,W 10-6; Th-Fr 10-9
21	Calder's	45 Branch St	Colonie	555-8606	M,T,W 10-6; Th-Fr 10-9
22	Pettig's Stereo	2764 Consort Rd.	Schenectady	555-8424	M,T,W 10-6; Th-Fr 10-9
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Hippo's	1500 Central Ave.	Albany	518 447 5538	M,T,W 10-6; TH,F 10-9, Sat 10-6
BJ's Wholesale Club	Dept of Health WCL&R	Albany	518 474 1519	M,T,W 10-6; TH,F 10-9, SatSun 10-

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Mail-List Management

Bulk-Mail Software

AccuZip6 1.8.7

PROS: Flexible parsing during import; informative progress indicators; batch and individual processing; unattended operation possible; lowest rates. **CONS:** Can't view CD-ROM data; incomprehensible interface; confusing documentation; expensive. **COMPANY:** Software Publishers (800/233-0555). **LIST PRICE:** $689; annual subscription $200.

MW ★★★

Bulk Mailer CASS 1.00d

PROS: Unattended operation possible; supports Apple events; inexpensive. **CONS:** Slow; batch processing only; coding problems; can't view CD-ROM data; poorly documented; no bar-code font. **COMPANY:** Satori Software (206/443-0765). **LIST PRICE:** $150; quarterly updates $150; whole year $525.

MW ★★

ZP4 12.1

PROS: Batch and individual processing; can view CD-ROM data; supports Apple events; includes bar-code font; inexpensive. **CONS:** Uninformative progress indicators; unattended operation requires extra work; only online documentation. **COMPANY:** Semaphore Corporation (408/688-9200). **LIST PRICE:** $125; quarterly updates $125.

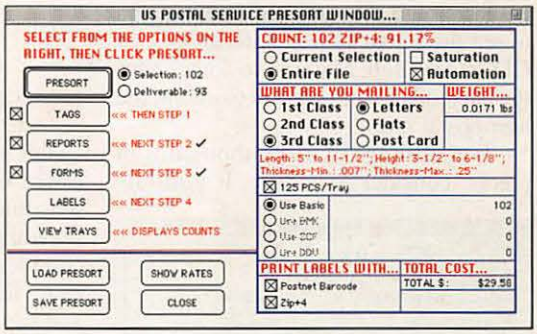
MW ★★★

COMPUTER PRODUCTS OFTEN promise to save time, effort, and money, but rarely are these savings as easy to quantify as with CD-ROM–based mail-list–management tools. Software Publishers' AccuZip6, Satori's Bulk Mailer CASS, and Semaphore's ZP4 can pay for themselves by helping you qualify for lower postage rates when mailing 200 or more letters or postcards at one time. And they eliminate waste by weeding out duplicate and undeliverable addresses.

You don't need a computer to do bulk mailings. Just pay the annual permit fee, sort mail according to United States Postal Service (USPS) guidelines, prepare the necessary forms, and deliver everything to the appropriate facility. Sounds easy, but USPS regulations make our tax code seem simple and fair. The three programs relieve some of the drudgery.

The more help you give the post office, the lower your rate. A 29-cent first-class letter drops to just 19.8 cents via third-class if you sort by zip code. Include zip+4 and pay 18.9 cents per piece. Apply bar codes and it's only 17.9 cents each. The rates get even better for mailings concentrated geographically. (For more on bulk mailing, see *Working Smart*, *Macworld*, March 1994.)

To qualify for zip+4 rates, you must use a program certified for Coding Accuracy Support System (CASS). At their most basic levels, AccuZip6, Bulk Mailer CASS, and ZP4 are all CASS certified and all work the same. First, you import tab-delimited mailing lists generated by other programs. (AccuZip6 lets you specify any delimiter—handy for processing non-Mac lists.) As each program imports records, it standardizes them, identifying address components, correcting abbreviations and capitalization, and then placing the components in the order the USPS requires. Once each program has standardized the imported addresses, it adds zip+4 and carrier-route numbers that it determines by consulting a CD-ROM containing every valid U.S. postal address.



AccuZip6 AccuZip6 does everything you could ever demand of a mail-list program—standardize, code, sort, label, and so on—all with an interface only a mother could love.

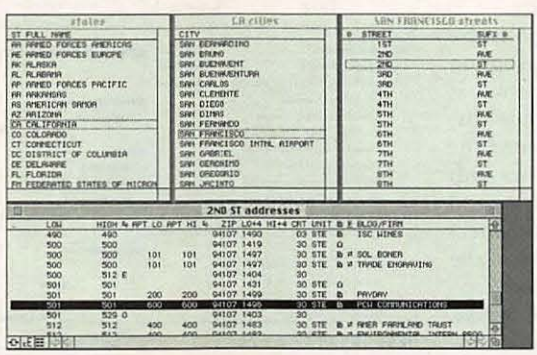
Processing time depends on the speed of your computer and CD-ROM drive (for best performance, copy data files to a hard drive). On a Mac IIci, Bulk Mailer CASS processed 200 records per hour; AccuZip6 and ZP4 were twice as fast. Since processing is time-consuming, progress reports are essential. AccuZip6 is exemplary, displaying the contents of records as well as the number completed/remaining, time elapsed/remaining, and a breakdown of valid/invalid addresses. Bulk Mailer CASS displays just the elapsed time and number of records processed, and updates this only periodically. There are other progress options, but they aren't documented. ZP4 shows the least, displaying only a percentage-complete thermometer.

You might think all CASS-certified programs would generate identical output, but that's not the case. For example, AccuZip6 was the only one of the three that had difficulty with some strange but valid addresses such as S67W17573 Rossmar Drive and HCR 64 Box 64. ZP4 and Bulk Mailer CASS incorrectly assign the first zip code to an address with multiple possibilities, such as an office building with the suite number omitted. These sorts of errors are disconcerting, especially when you consider that certification requires 98 percent accuracy.

Both AccuZip6 and Bulk Mailer CASS can run unattended: both present any questionable records after processing the entire list; this may make manually correcting addresses difficult if the problem isn't an obvious misspelling or the like. What you need is the ability to see the CD-ROM data (such as all streets in a town) so you can compare problem addresses with valid ones. You can do this with ZP4 when processing individual records but not in batch mode. ZP4 further hampers batch mode by presenting errors as it encounters them. You can ignore errors for unattended operation, but then you must repeat processing to clean up your mailing lists.

Bulk Mailer CASS and ZP4 are simple tools for standardizing addresses and adding zip+4 and carrier-route codes. But neither program stores mailing lists, prints

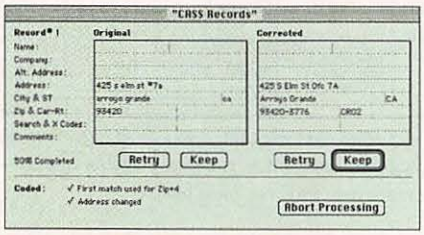
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ZP4 All three programs can process batches, but only ZP4 allows you to examine individual addresses by looking directly at the valid address information on a CD-ROM.

labels, or helps bulk-mail preparation in any other way. For those tasks, you must rely on a database manager or dedicated mailing-list program. Both programs support Apple events, but Bulk Mailer CASS works only with Satori's own companion mail-list program; ZP4 comes with sample stand-alone applications, as well as scripts for FileMaker Pro, HyperCard, and Frontier. Unfortunately, the online instructions for incorporating these scripts into your own files are negligible. Despite ZP4's flaws, I recommend it over Bulk Mailer CASS for periodic mailings of a few hundred or few thousand pieces. It's faster and cheaper, and it allows you to see the actual address information on CD-ROM. Bulk Mailer also comes with the bar-code font necessary to obtain the best postal rates.

For mailings of many thousands of pieces, consider AccuZip6. It not only



Bulk Mailer CASS The clean interface of Bulk Mailer CASS shows the original record alongside its "correction," giving you the opportunity to fix parsing problems.

cleans lists, but it also locates duplicate records and prepares all the forms, sack tags, and labels for first-, second-, and third-class bulk mailings. You can even maintain your database in AccuZip6. This program supports a wide variety of Avery laser labels and envelope printers and can print bar codes and special sorting flags telling you when to begin a new bundle, sack, or tray. Best of all, AccuZip6 suggests the sorting method that results in the lowest possible postal rates. For example, you might save money by delivering some mail to a Bulk Mail Center and the rest to the Section Center Facility.

Without question, AccuZip6 is the most comprehensive mailing program available for the Mac. Unfortunately, it is also the most incomprehensible. Inscrutable postal regulations are part of the problem, but most of the blame lies with AccuZip6's bewildering user interface and documentation. Software Publishers claims that much of the modality of the program will disappear when AccuZip6 switches from 4th Dimension to FoxBase. In the meantime, expect to spend a considerable amount of time and money on Software Publishers' technical-support line.—OWEN W. LINZMAYER

FastTrack Schedule 2.1

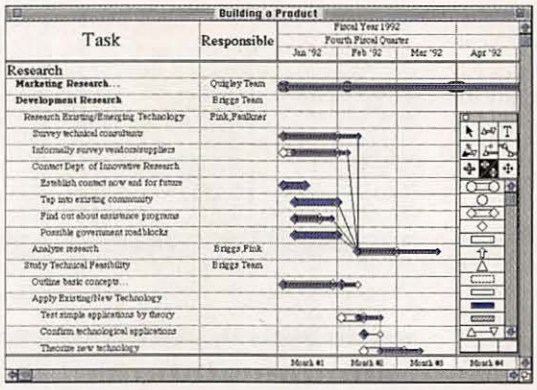
Project Scheduler

PROS: Arranges activities in outline-style hierarchy; hides low-level activities; displays planned and actual schedules on the same chart; provides custom symbols for activity bars; lets you paste graphics on Gantt charts. **CONS:** No scaled views of Gantt charts; no automatic tracking of personnel or material resources.
COMPANY: AEC Software (703/450-1980).
LIST PRICE: $279.

MW ★★★

PROJECT SCHEDULERS COME IN ALL shapes and sizes. The simpler ones enable you to create graphical time lines called Gantt charts to plan a project's schedule, and then compare the planned schedule to the actual schedule. More-complex programs offer resource allocation, linked projects, and more chart and report formats than you can shake a stick at. FastTrack Schedule is one of the simpler project schedulers, and its feature set is ideal for managers who need to put together a schedule quickly and easily.

FastTrack Schedule lets you customize just about every aspect of a Gantt chart. In addition to the mundane options, such as selecting time periods (hours, days, months, or years), hiding weekends, and selecting the start and end dates for a project, you can design new symbols for activity bars and milestones, and paste graphics onto a Gantt chart. You can also create new columns for a chart—including start date, finish date, duration, or percent completed—from a predefined list, or you can add a new column for your own data, for example, expense estimates, project leaders, or needed resources. Unlike Microsoft Project or MacProject, FastTrack Schedule is not designed to track resource assignments.



Using Levels in Complex Projects This screen shows four levels of a project's activities. The floating window on the right side contains all the tools you need to create a Gantt chart.

FastTrack Schedule has a clever option for tracking user-customized values. If you associate a column's value with an activity bar, the value displayed in the column changes whenever you change the length of the corresponding activity bar. This helps track linearly related project items, such as human-resource costs (if the costs are a fixed amount per day, for example).

As you create a Gantt chart in FastTrack Schedule, you can create a hierarchy of tasks and subtasks, assigning start and end dates to each. The hierarchy is similar to that created with an outliner—when you double-click on a task, its related subtasks are hidden; you see only the activity bars and other information for the major tasks, but not for the subtasks. This method is useful for large projects.

One of FastTrack Schedule's more useful features is setting dependencies. You can use either "hard" or "soft" dependencies; when you create a hard dependency between two activities, the time period separating the two stays the same, even if the first activity slips to a later date. A soft dependency allows the time between the final date of the first activity and the start date of the second activity to shrink to nothing if the first one slips to a later date. But when the two dates become the same, any further slippage of the first activity pushes back the start date of the second.

FastTrack Schedule does not include any scaling options for viewing Gantt charts. When you create a large chart, you see only a small part of it on your screen, and you have to scroll the window to see other dates or tasks. I would prefer to select a 50 percent reduction or even a scale-to-fit option for viewing the chart on screen.

If you're new to project management, or if you just need to create Gantt charts for single projects, I recommend FastTrack Schedule. You can create impressive graphical charts for presentations, as well as track a large number of activities in complex projects. But if you require more power to manage conflicts between multiple projects and resource allocation, you'll need a more comprehensive program like Microsoft Project.
—DAVE KOSIUR

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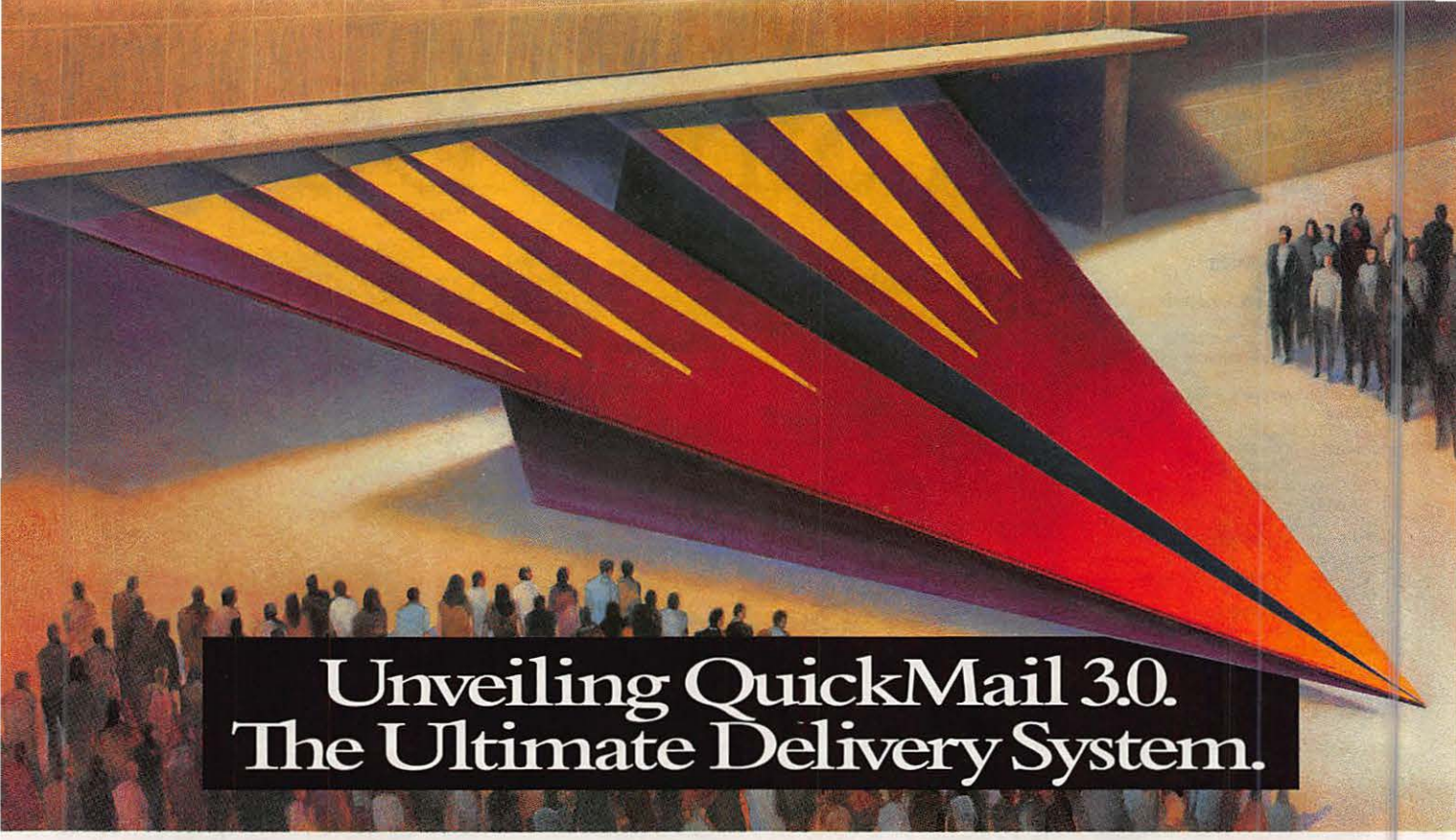
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SCSI Director Pro 3.0.6

Hard Disk Formatting Utility

PROS: Simple, one-button hard disk formatting; supports SCSI Manager 4.3. **CONS:** Some features don't work on Power Macs; so-so manual; expensive 900 phone number for tech support. **COMPANY:** Transoft Corporation (805/565-5200). **LIST PRICE:** $99.

MW ★★

TRANSOFT'S SCSI DIRECTOR PRO takes a kitchen-sink approach to hard drive formatting. In addition to formatting and partitioning most fixed hard drives, optical drives, and SyQuest and floptical devices, the program supports CD-ROMs and mirroring, a feature that allows you to set up another volume for real-time backups. A DataGuard utility prevents data corruption if a SCSI cable is accidentally removed or if there is a loss of power. Additionally, SCSI Director can supposedly mount removable devices without using a System extension.

The program ships with two high-density disks. One floppy is a start-up disk containing System 7.1 and a collection of System enablers. The other disk contains the SCSI Director application, the CD-ROM software, and some auxiliary software, including a removable-disk–mounting extension (even though you aren't supposed to need it with this program—but more about that later).

If you just want to format and test your hard drive, setup is easy. You click on the Auto Setup button in the program's main window and OK the warning messages, and SCSI Director takes it from there. Partitioning (dividing your drive into more than one volume) is also simple: just click on the Partition button and select the number and kinds of partitions you wish to create.

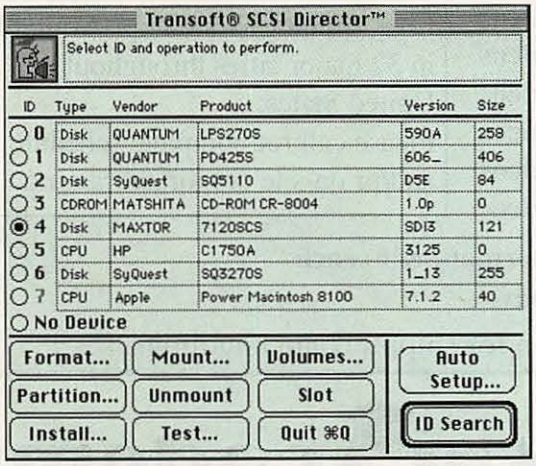
However, when it comes to doing some of the fancy tricks described on the program's box, the going gets rough, and the manual doesn't simplify things. (The program provides a number of Help menus, but they don't really expand on the manual.) When I tried out one of SCSI Director's advertised features—mounting a removable device without installing a disk-mounting extension—I found no information about it in either the manual or the Help menu. The program's Read Me file contained the sole specific reference to the feature, and indicated that the option was turned off by default because enabling it slowed down drive performance slightly. Whatever the reason, I never got the feature to work properly after turning it on.

Although SCSI Director seemed to work OK on regular Macs, I ran into problems when I used it on a Power Macintosh. Some drives formatted with the program failed to mount properly at start-up, and I ended up mounting these disks with programs like SCSI Probe.

Transoft's technical-support line, a 900 telephone number, costs $1.90 per minute. Although response time was quick when I gave the staff a call—and they did call me back to try to diagnose the disk-mounting problem—they were not able to solve the problem. When I reformatted the affected drives with either Casa Blanca Works' Drive7 3.0 or FWB's Hard Disk ToolKit 1.5.1, all was well again. Transoft's CD-player application was equally troublesome. Although it sports a pretty face, it had a problem getting past the first track on my audio CDs when I tried it with Apple's new CD300+ drive.

SCSI Director has a history of frequent revisions, so I expect that the difficulties I encountered will be solved before long. If you stick to basic disk-formatting and partitioning chores, the program will get the job done. But if you want to try on some of its special features for size, be prepared to fly blind, unless paying $1.90 a minute for help doesn't faze you.

—GENE STEINBERG



SCSI Director's Command Center Most of the program's features are activated by buttons located at the bottom of the main window.

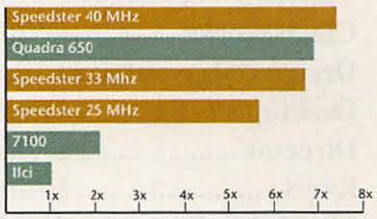
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MW ★★★

YOU MIGHT EXPECT A PROGRAM called Creative Writer to focus primarily on writing skills. However, Creative Writer's emphasis is clearly on *creative*. Suggested for ages 8 and up, Creative Writer doesn't teach kids to be better writers, but it does encourage them to develop ideas and provides a fun vehicle to express those ideas creatively. It's a graphics/page-layout/word processor hybrid that offers some terrific type effects, zany sounds, bright graphics, and wacky characters.

When kids load Creative Writer, they enter the city of Imaginopolis and meet McZee, a dorky but likable character that eight-year-olds will find inviting. While McZee may be a little too offbeat for some preteens and early adolescents, his sidekick, Max, is a much cooler character who balances out some of McZee's Barney-like qualities.

The creativity takes place in a four-story building that contains the lobby/library, the project studio, the writing studio, and the idea workshop. All four floors eventually lead to the same tool-based editor, which is bursting with special effects, borders, backgrounds, stickers, and sounds.

The lobby/library is where kids find the portfolio that contains their saved work, although there are other easy ways to open saved files. (New documents can be started on any of the other three floors.) Creative Writer frequently asks kids if they want to open something they've already created, and they can also personalize the lobby/library by hanging their own drawings on the walls. Kids ride an elevator or click on the firefighter's pole to move up to the higher floors. It's easy to skip the lobby/library level and get right to work.

The project studio offers templates for creating newspapers, cards, and banners. Eschewing political correctness, Microsoft offers access to the various projects through animal heads mounted on the wall: click on the moose head to make a Moosepaper, the aardvark head to create a Cardvark, and the rhinoceros head to build a Banneroceros.

The writing studio lets kids access dozens of tools. Don't be surprised if you find yourself creating cards and signs with the program's special tools for adding shadows, textures, odd-shaped words, and a variety of eye-grabbing effects.

The idea workshop offers some simple tools to help kids develop a story. The Splot Machine scrambles a variety of sentence fragments to come up with weird sentences that young writers can use to generate story ideas. For example, they might get a sentence like this one: *The silly rabbit / rode a bike / through your bedroom closet.* The Picture Window provides interesting line drawings that children can color and/or use as the inspiration for a story.



Cool Effects Are a Snap Creative Writer makes it easy to add fancy and fun effects to cards, banners, and any other projects your kids can dream up.

Creative Writer's interface is colorful and fun. For younger children who might have a shorter attention span, there's never a dull moment. McZee changes randomly from one wacky outfit to another; after short periods of inactivity, an animal scurries across the screen, or McZee pokes his head through the wall. Creative Writer takes over your Macintosh, however, so you lose access to the familiar Mac interface and the Finder until you quit the program. For kids who have already mastered Macintosh fundamentals, Creative Writer can be counterintuitive.

Creative Writer has no manual, but it does come with a brief *Getting Started* pamphlet and a colorful poster that does a surprisingly good job of describing the basics of the software.

While Creative Writer's features are appropriate for kids of all ages, some more-mature young users may find it kid stuff. Keep the program's cartoonish design in mind when you're buying software for kids in their early teens. That small caveat aside, Creative Writer is an engaging program that packs a lot of fun and features into the small city of Imaginopolis.—DAN MUSE

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Two Health Guides

Medical CD-ROMs

Mayo Clinic Family Health Book 1.2

PROS: High-quality photographs of skin disorders and other diseases; effective use of hypertext and audio. **CONS:** No reference to some alternative therapies; appearance of text could be improved. **COMPANY:** IVI Publishing (612/686-0779). **LIST PRICE:** $69.95.

MW ★★★★

Mayo Clinic: The Total Heart 1.0

PROS: Covers risk assessment as well as diagnosis and treatment. **CONS:** Videos would be more effective than animations in many places; limited section on cardiovascular emergencies. **COMPANY:** IVI Publishing (612/686-0779). **LIST PRICE:** $59.95.

MW ★★★

THE MAYO CLINIC FAMILY HEALTH Book and The Total Heart are the first in a series of medical CD-ROM titles from the Mayo Clinic. Don't expect a step-by-step guide to removing your aunt's spleen or repairing a leaky heart valve, though—both programs are aimed squarely at health-care consumers, not professionals. The two reference works sport a common interface, with a table of contents and a large, fixed-size window for text, graphics, and movies. Icons provide single-click access to functions, including a dictionary, a search engine that lets you hunt for topics by keyword, and a handy list of recently viewed items.

The most disappointing part of the presentation is the plain-vanilla Geneva font that is used for most of the text; the absence of curly quotes and apostrophes also is surprising. On the other hand, hypertext is used effectively, with linked text and icons clearly shown in color. I also like the succinct narrations that accompany the illustrations, although you can turn off the audio if you wish.

Home Health Guide

As its name suggests, the Family Health Book deals with the full gamut of health-care topics, from AIDS to zygotes. Major sections cover basic human anatomy, first aid, keeping fit, diseases, skin disorders, and modern medical care. The appendix—not the squiggly thing that surgeons like to remove—includes helpful information on medical tests, a guide to drugs, conversion tables for weights and measures (a working calculator would be even more useful), and a dictionary of medical terms.

The Family Health Book is most effective at presenting material graphically. For example, the 8-bit color photographs of rashes and other skin diseases are first-rate and are bound to be helpful to parents struggling to decide whether to quarantine Junior for a few days (see "Rash Decisions"). The anatomic diagrams are accurately rendered and instructive, and they incorporate a clever sliding control that brings different organ systems into view by altering the transparency of various body parts. On the other hand, I was disappointed to find no reference to alternative therapies such as acupuncture. I was also surprised that some well-accepted tests (like transvaginal ultrasound) are not mentioned at all.

The Total Heart

More narrowly focused than its companion, The Total Heart concentrates on cardiovascular health and related subjects. Major sections cover normal anatomy and cardiac function, heart disease, risk assessment and reduction, and diagnosis and treatment. There is also a chapter that touches briefly on topical issues in cardiology such as the role of aspirin in preventing stroke. The final section, on cardiovascular emergencies, is limited to a table that lists symptoms, possible diagnoses, and suggested actions.



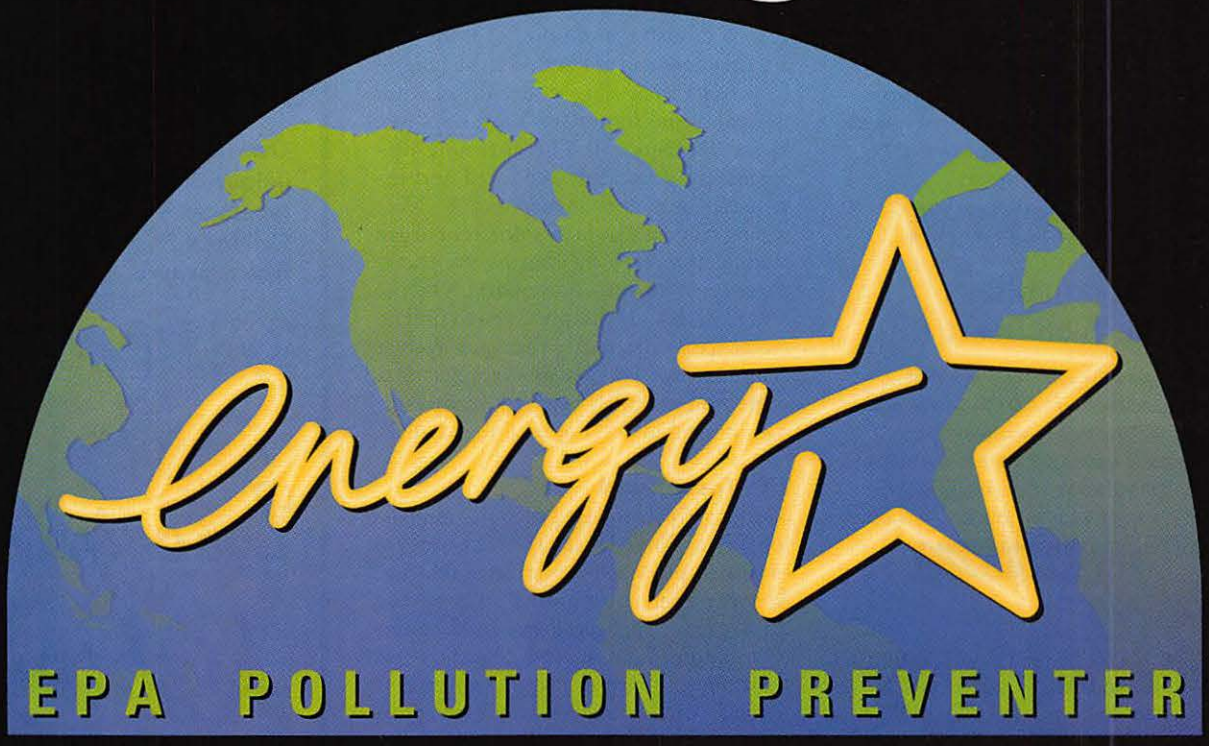
Rash Decisions This photograph of a child with roseola infection is from the section on skin disorders in the Family Health Book.

Although The Total Heart makes liberal use of drawings, photographs, and clever animations, video sequences would have been more effective. The few videos that are included are well done, however.

Limitations notwithstanding, the Family Health Book and The Total Heart contain a wealth of useful information. If you have a suitably equipped Mac, both are worthwhile additions to your CD-ROM library.—FRANKLIN N. TESSLER, M.D.

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The San Jose Mercury News, in association with Multimedia World and Macworld, will present the Electronic Learning Fair (ELF) in the San Jose Convention Center on December 2, 3 and 4. This unique, first-ever showcase is about what's available today, not another fantasy about the Classroom of Tomorrow.

Only in Silicon Valley could you find an event like this - along with lots of computer-literate parents and educators in the market for new teaching resources.

Twelve Model Classrooms

The main attraction at ELF will be a dozen model classrooms, preschool through high school. Each classroom, equipped with 20 to 30 multi-platform workstations will give attendees hands-on exposure to the latest in edutainment and educational software.

Exhibit Booths

From these classrooms, parents and teachers will be referred to reseller exhibit booths where they can buy demonstrated hardware and software products. Other exhibit booths will include non-profit groups and family and educational service providers.

Promotion Plan

Promotional efforts to encourage Bay Area parents and educators to attend ELF will include an aggressive schedule of radio, television and newspaper advertising. These will be supplemented by direct promotion through area schools, community groups, and an extensive public relations campaign.

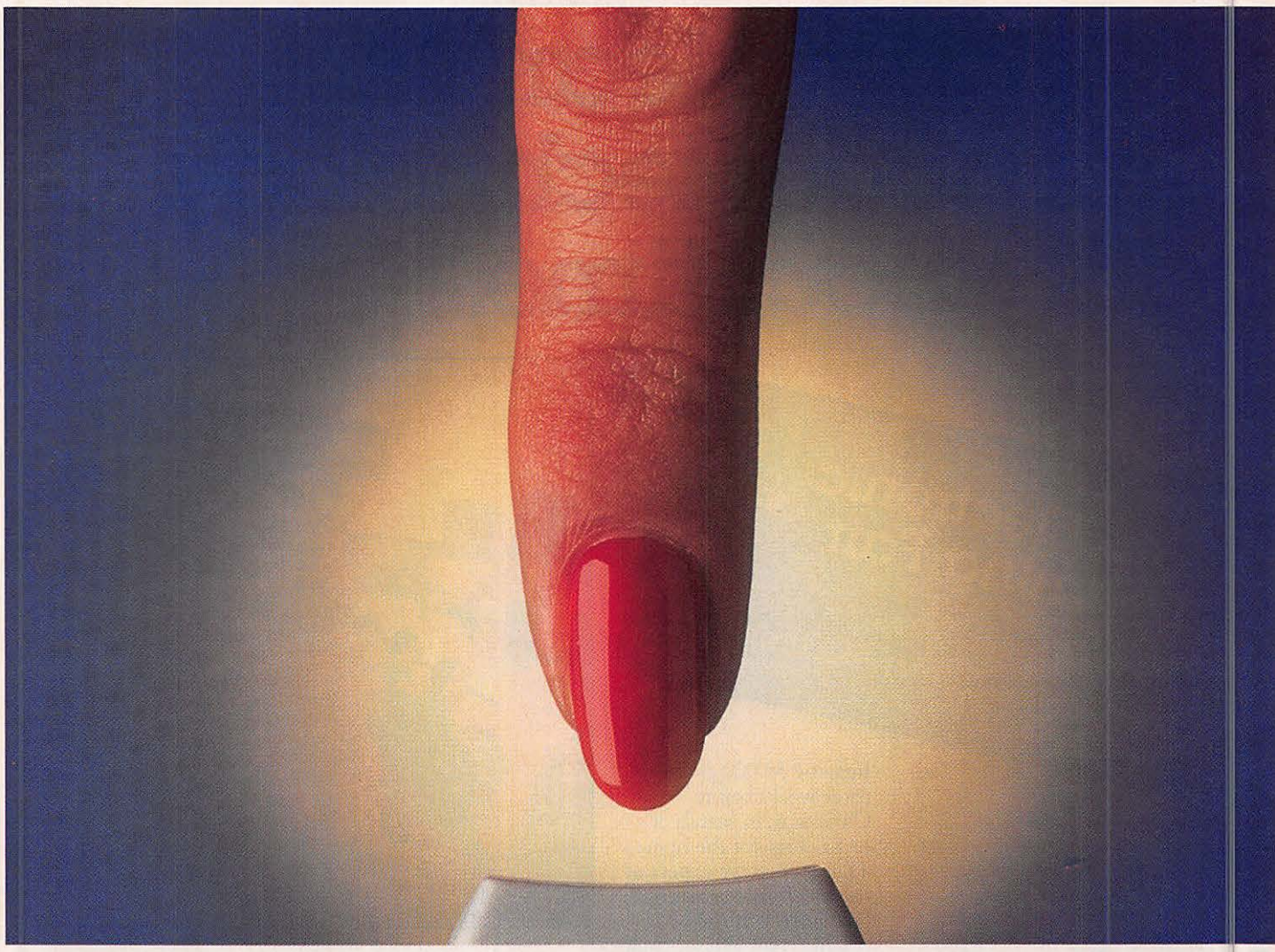
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SCSI Sentry

Terminator

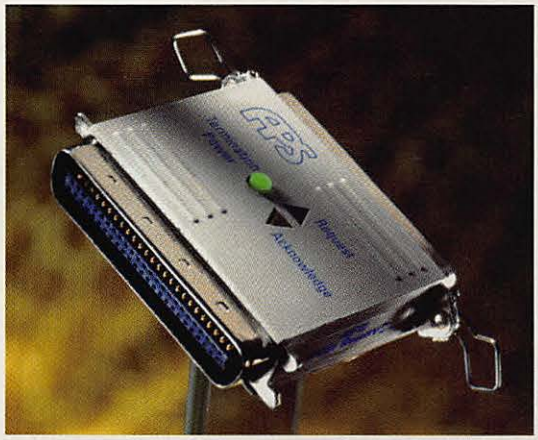
PROS: Reduces SCSI hookup hassles. **CONS:** A little bit pricey for a terminator.
COMPANY: APS Technologies (816/483-6100). **LIST PRICE:** $99.

MW ★★★★

HOOKING UP AN EXTERNAL SCSI device (such as a hard drive, CD-ROM drive, or scanner) to your Mac should be a simple affair. You keep cables as short as possible, and the first and last device on the SCSI chain must be terminated. But sometimes SCSI chains just won't behave as they should. APS Technologies' SCSI Sentry is designed to address and simplify these complicated situations.

With long SCSI chains, hard drives may fail to mount when you start up your computer, or your Mac may freeze at the Welcome to Macintosh screen, or it may crash when it writes data to and from a drive. You are then forced to resort to an endless process of swapping cables, SCSI devices, and termination until the situation becomes normal again—if it ever does.

The SCSI Sentry is an active terminator that uses a circuit that the manufacturer calls DaTerm (which is also incorporated into APS's SR-2000 line of hard-drive cases). The SCSI Sentry, about twice as long as a typical SCSI terminator, is designed to monitor the voltage and impedance (a measure of resistance) along a SCSI chain, and to supply the needed termination power to make sure everything works correctly. A round, green LED on the SCSI Sentry indicates whether the terminator is functioning and, more important, whether your Mac or hard drives are supplying proper termination current. The SCSI Sentry also has red and yellow triangular LEDs that indicate SCSI activity and are useful for monitoring potential SCSI problems.



TOM GIBSON

To put SCSI Sentry through its paces, I attached it to a killer SCSI chain that has long been a challenge to maintain. The chain, which has a mixture of removable drives, hard drives, and a scanner, has always required *two* terminators at the end to work properly; I replaced both terminators with just one SCSI Sentry module. I did have to fiddle with device positions and cabling, but when all was said and done, SCSI Sentry did its stuff. All the problems I have experienced became history—SCSI Sentry remained attached to the SCSI chain for several weeks during my tests, without a single sign of trouble. I tried it out in several other installations with equally impressive results.

Since you can buy a regular terminator block for maybe $10 or $20, the $99 price for the APS SCSI Sentry may seem rather steep. But when a SCSI chain gives you aggravation, and a good set of cables and careful attention to installation doesn't help, this device may well be the cure for your SCSI woes. Even if your SCSI setup is working OK, I heartily recommend SCSI Sentry as an extra ounce of protection.
—GENE STEINBERG

Conley SR2 RAID System

High-Performance Storage

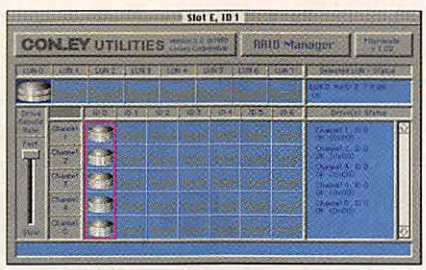
PROS: Extremely fast in some operations; excellent tech support. **CONS:** Tricky to reconfigure; software reports nonexistent errors.
COMPANY: Conley Corporation (212/682-0162). **LIST PRICE:** $25,335.

MW ★★★

MW LAB SPEED DEMONS, CLUTCH YOUR hats (and your pocketbooks). While RAID technology is typically praised for its fault-tolerance rather than its speed, Conley proves that you can have both. The Conley SR2 disk array, with its five 1.6GB drives, offers redundancy and hot-swapping capabilities and comes in several other configurations—including one with redundant array controllers and 16GB of storage.

As a RAID Level 3 array, the SR2 is best for large data transfers. In Macworld Lab tests, it outperformed the fastest Level 0 arrays currently used for high-end digital video and sound. On a Centris 650, the SR2 took only half as long as the fastest Level 0 array to transfer a non-Finder copy of a 40MB file—6.25 seconds, versus 13 seconds. Low-level tests show a maximum sustained-transfer rate of 16.5MB per second on writes and 17.6 MBps on reads.

The SR2 achieves such high speeds by using a PDS card with dual-channel Fast and Wide SCSI (our tests only used one data channel) and a five-channel array controller capable of managing 35 drives. For the Power Macintosh, Conley provides a NuBus adapter board that, the company claims, achieves the same speeds as PDS cards. For the best performance, a Power Mac 8100/80 is required. But, of course, performance varies depending on the task. In Adobe Photoshop tests, the SR2 and our Level 0 array were roughly equivalent. (At press time, Conley claimed speeds of 3 MBps for the SR2 as a Level 0 array using both data channels.) When we configured the SR2 as a Level 5 array, a search through a 96,000-record 4th Dimension database ran 13 percent slower on the SR2—and only 3.4 percent faster than a standard 230MB internal drive. We pulled out one of the five drives to simulate a drive failure and were impressed when the 4D search continued as if nothing had happened; the search took no more time than it had under the complete five-drive array.



Array Management RAID Manager shows each drive's status. Network software notifies you when a drive fails.

The array, however, can cause some headaches. Though simple to use, the management software often reports nonexistent errors. For example, when we reconfigured the array from Level 0 to Level 3 we got several error messages, but the SR2 worked fine just the same. In contrast, a mistake that we made while configuring a Level 3 or Level 5 array slowed the SR2 to a crawl. Fortunately, Conley's manuals are concise and clear, and its technical support is stellar.

Is the SR2 worth its high price? For critical tasks requiring redundancy and round-the-clock operation, the SR2 is one of the best (and only) Mac RAID systems shipping. For high-end video, the answer depends on whether your software takes full advantage of the SR2's speed. Even with these caveats, the Conley SR2 is impressive.
—TIM WARNER



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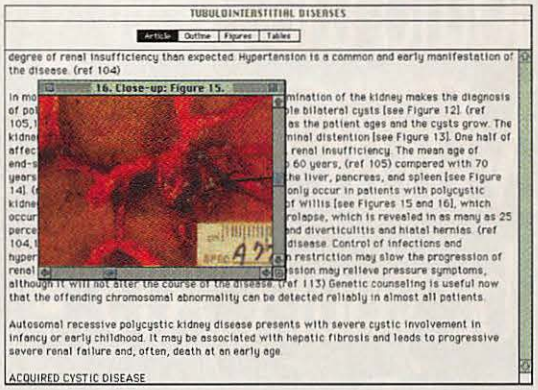
Clinical-Medicine Articles on CD-ROM

PROS: Articles include text, tables, illustrations, and case simulations; fast search engine. **CONS:** Difficult to open linked items; poor interface for case simulations; no global font preferences. **COMPANY:** Scientific American Medicine (212/754-0550). **LIST PRICE:** $395 for four quarterly discs.

MW ★★★

IF SOME MEDICAL PUBLISHERS HAVE their way, those textbooks and journals that line the shelves of doctors' offices will soon be replaced by rows of CD-ROMs in plastic cases. *Scientific American Medicine*—a popular series of publications covering topics in clinical medicine—is the latest reference work to become available in electronic format. For $395, you get a one-year subscription to SAM-CD, with a new disc coming out quarterly. (The license agreement requires you to return the previous disc when a new one arrives, using the provided postage-paid envelope.)

SAM-CD runs on any Mac equipped with a CD-ROM player and at least 1MB of RAM. If you only want to browse, you can view an alphabetical list of all the articles on a disc; double-clicking on a title opens the article in a separate window. You can change the 12-point Geneva default font to any font and size you prefer, but alas, there's no way to make your preferences permanent. Buttons at the top of the window let you view an article in outline form or a list of all the tables and figures in the article. SAM-CD's illustrations are generally quite good, although some of the X rays are barely adequate for learning purposes.



Words and Pictures SAM-CD from Scientific American Medicine includes all of the text and illustrations from the series' printed version in an accessible CD-ROM format.

SAM-CD's Word Search function lets you scan a disc for articles that contain specified words, with support for Boolean operations (AND, OR, NOT) and wild cards. You can even restrict your search to article titles, text, figure captions, or references. The search engine is fast, with a delay of at most a few seconds before a list of matching articles appears. Since it's likely that you'll want to gather snippets of articles as you research a topic, SAM-CD allows you to create documents called Notepads into which you can paste up to 20K of text.

SAM-CD's interface is utilitarian at best, and its use of hypertext could be improved. For example, to view a reference or figure cited in an article, you have to click on at least one character in the text, and then select a menu command or type its keyboard equivalent; double-clicking on the citation would be much simpler. SAM-CD also includes a set of medical case simulations and multiple-choice tests. Although they complement the articles effectively and are a good way to earn CME (continuing medical education) credits, the user interface is below par. Despite a few shortcomings, though, SAM-CD should prove a worthwhile addition to any medical library. —FRANKLIN N. TESSLER, M.D.

TextBridge 2.0

Optical Character Recognition Software

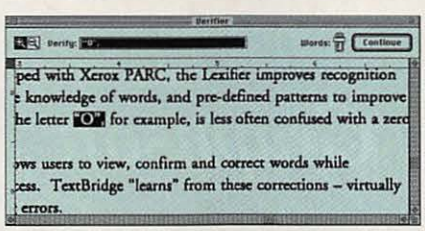
PROS: Convenient interface; respectable accuracy; includes AppleScript for batch processing. **CONS:** Problems with some TIFF files; bewildering small flaws. **COMPANY:** Xerox Imaging Systems (508/977-2000). **LIST PRICE:** $99.

MW ★★★

XEROX IMAGING SYSTEMS HAS released a Mac version of its highly regarded TextBridge optical character recognition (OCR) software, available for more than a year under Windows.

It's a bargain—the current market leaders in OCR cost $500—but that recommendation includes several caveats. On a set of three exceptionally clean documents (in 14-point Times Roman printed at 600 dpi), TextBridge scored 100 percent accuracy. That puts it on a par with Caere's OmniPage Professional, a *Macworld* Editors' Choice in our last OCR roundup (November 1993). TextBridge also turned in a fine performance (95 percent accuracy) on the body text of a scanned paper fax, a particularly challenging document since the text resolution had effectively been degraded twice. In competition with the six Mac OCR-roundup packages on a variety of documents, TextBridge would probably place no lower than second. Accuracy on italic and bold text was exceptionally good.

TextBridge's recognition problems are truly baffling. On a document from a statistics-software vendor, it got *hierarchical cluster analysis* right, but read *the* as *tne* all the way through the text. Xerox's Lexifier technology is supposed to guard against this and other low-level errors. To its credit, TextBridge's Verifier mode enables you to train the program to recognize easily misconstrued words in a particular font; at the expense of considerable processing time (several minutes per page on a Power Macintosh 7100), you can push reading accuracy to 98-plus percent on nearly any font at



Verifier Mode Reading the sentence in Xerox's marketing literature describing TextBridge's ability to tell zero from the letter *O*, the program gets it wrong anyway. Verifier mode nonetheless trains the software to get this right on a later reading.

point sizes larger than 6, if you're willing to verify 5 to 15 pages of text.

TextBridge has settings for text quality, previewing, verifying, image orientation, zoning, and language character set (English, French, German, Italian, and Spanish). The Auto Zone feature correctly chose columns in every multicolumn document I tested, although blocks of line art usually confused it. TextBridge supports every currently available scanner and the TWAIN source manager, and it can process scanned documents to sets of TIFF or PICT files for later recognition, but it could not read TIFF files saved in Photoshop 2.5.

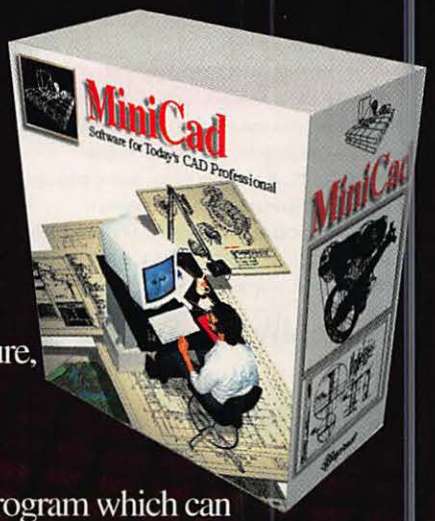
AppleScript gives this product extra power for heavy-duty use, in one specific way. It's possible to train TextBridge on your documents (to attain acceptable accuracy) and fine-tune some of the AppleScript examples to recognize and store massive sets of files automatically. TextBridge is priced as an entry-level product, but its AppleScript capability is likely to appeal mostly to advanced users with large projects.

Users often expect OCR software to be able to read less-than-perfect text, the way humans can read. Neither TextBridge nor any other OCR product quite does that yet. But TextBridge is impressive on good documents and can be trained and automated. You won't find that anywhere else at this price.—CHARLES SEITER

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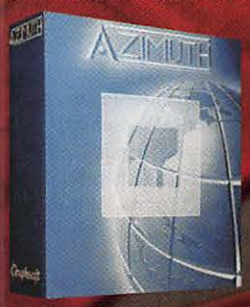


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CD AllCache 2.0

CD-ROM Accelerator

PROS: Caches both directories and data; offers predefined cache settings; permanently caches unlimited number of CD directories. **CONS:** User can't control which disk drive is used for caching; user can't add to predefined settings; maximum RAM cache is 512K. **COMPANY:** CharisMac Engineering (916/885-4420). **LIST PRICE:** $79.95.

MW ★★★

UNTIL RECENTLY CD-ROM FANS have had to live with CD-ROM's slow access speeds. CD AllCache promises to improve access time by caching a CD's directory onto a hard disk and putting its most frequently used data into RAM.

CD AllCache 2.0 consists of a control panel that replaces your CD-ROM driver; a desk accessory for playing audio CDs; and a well-written user's guide. Once the program is installed, whenever you insert a CD that CD AllCache hasn't seen before, it copies the CD's directory to a file on your start-up disk and immediately begins caching data accesses to a RAM buffer of up to 512K. The audio-player DA includes one notable feature: it offers five sizes and orientations for the control window.

You customize CD AllCache through its control panel, which lets you specify the total RAM cache size and page size. The control panel includes a list of buttons that set the cache parameters to predefined values; the buttons include generic types, such as QuickTime, as well as title-specific buttons. The control panel also displays a list of directories cached on your start-up drive; you can delete directories you don't want.

Both the directory and data caches work well. When you use a previously cached CD, having the directory stored on a hard disk makes mounting and accessing files much quicker. The RAM data cache also allows for extremely fast access of repeated data, such as large images and text files.

Although CD AllCache does its primary job well, there is room for improvement. Directories can be large, and if your start-up volume is small, you can quickly run out of space just by swapping CDs. The program should let you select the destination volume, but doesn't. Also, though the settings buttons are handy, you can't add your own. It would be nice, too, if CD AllCache restored the last cache setting for a particular disc the next time you inserted the CD; as it is, you must manually change cache settings for every disc. (CharisMac plans, in an upcoming version called CD AutoCache, to add a feature that lets users scan a CD and automatically optimize the cache settings based on the CD's contents.) Finally, the 512K cache limit is too small, and CD AllCache is incompatible with Apple's Audio Player DA, which you may prefer for its ability to catalog CD song titles.

Despite CD AllCache's limitations, though, most CD addicts will find that the speed improvement it delivers is worth the trouble.—MEL BECKMAN



Cache Control CD AllCache's control panel lets you change CD cache settings without rebooting. It includes a scrollable list of predefined settings for several popular CDs, but you cannot change the list.

JMP 3.0

Statistics Software

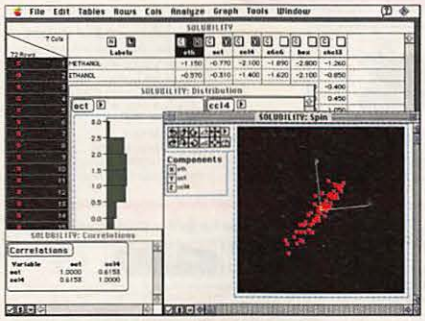
PROS: Includes experimental-design module; now offers survival and cluster analyses. **CONS:** Needs time-series analysis. **COMPANY:** SAS Institute (919/677-8000). **LIST PRICE:** $695.

MW ★★★★

AMONG THE GREAT PITCHER Satchel Paige's collection of maxims was "Don't look back . . . something might be gaining on you." JMP 3.0 from SAS Institute is gaining on Mac statistics market leaders StatView, DataDesk, and SYSTAT. In the world of statistics, SAS has the kind of resources Microsoft commands with its familiar business software, and the new version of JMP implements several years' worth of detailed user requests.

The starting point of a JMP analysis has always been a spreadsheetlike data table, acquired as any delimited text file or directly from SAS applications on other platforms. The Tables, Rows, and Columns menus contain more than 30 table-editing commands for convenient and precise data-structure control; but the feature that really sets JMP 3.0 apart is the Design Experiment command under Tables. SAS's excellent experimental-design program now operates directly on data tables within JMP, allowing specification of simple, mixed, general factorial, and optimal designs with a single mouse-click. The documentation of design features was easier to follow when JMP Design was sold as a separate product, but that's not much of a price to pay for the convenience of integration.

JMP 3.0 implements a substantial list of additions. Cluster analysis with tree-graph output operates on any selection of rows in a table; JMP now offers QuickTime data movies (a surprisingly useful method of exploratory data analysis); and contour and ternary plots are both options (although the contour plots are not as sophisticated as those in Igor and DeltaGraph). A new survival-analysis option (for analyzing failure in engineering or, ahem, death in medical experiments) includes proportional hazard models and parametric failure-time models. Two new moving-average control charts (unweighted, exponential) appear as quality-control options; it's puzzling that time-series data smoothing doesn't appear in other contexts in JMP.



New Design JMP 3.0 has folded JMP Design into its statistics program, producing a first-rate application for experimental work in the hard sciences.

Some improvements—floating tool palettes, an annotation tool for data tables, better color support, and a magnifier—simply indicate that JMP is catching up with its competitors. Other enhancements—such as the ability to accommodate any number of rows, limited only by RAM—are significant for users of large-systems SAS files. It's encouraging to note that calculation and graphing response (using a Quadra 610) is nearly instantaneous on data files smaller than 20 columns by 2000 rows. JMP has always had a simple focus on correlation and regression, and now with the addition of integrated experimental design, JMP 3.0 can be used for a wide range of biological, chemical, and physical-science investigations. It still needs time-series facilities for econometrics, and social scientists will want more explicit nonparametric statistics, but version 3.0 expands JMP's domain without losing any of its original appeal.—CHARLES SEITER

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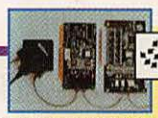
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THE MULTIMEDIA MAC

A versatile new 68040 machine for small business, education, and the home

MW LAB

by Jim Heid

IF YOU THOUGHT LAST MARCH'S introduction of the Power Macs meant Apple was done improving the Quadra line, think again. The Quadra 630 is an all-new machine based on the venerable 68040 processor. The computer sports new logic-board and case designs geared toward multimedia: from the optional TV-tuner board to the front-panel remote-control sensor, this is a computer designed for the television age.

The Quadra 630 is faster than the Quadra 610 it replaces, and it's priced right: $1199 for a model containing 4MB of memory and a 250MB hard drive (not including a keyboard or monitor).

Like many of Apple's recent 68040 Macs, the Quadra 630 has some nearly identical cousins: the LC 630, which is sold to the education market, and the Performa 630 series, which is sold through consumer electronics and office-supply outlets. The Performa 630 line includes several variants, each of which includes a selection of bundled software as well as a high-speed fax/data modem, monitor, and keyboard (see "The Quadra 630 Family Tree").

Why build a new 68040 Mac when you're busy preaching the Power Mac gospel? One reason is that the 68040 remains less expensive than the PowerPC 601 chip, so it still has a home in low-cost computers. Another reason is software: the Quadra 630 is available worldwide, and few Power Mac–native programs have been localized for languages other than English. What's more, the 630—specifically, the LC 630—is designed for the education market, where little native Power Mac software currently exists.

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By the time 630 owners are ready to make the move to PowerPC, Apple's planned upgrade option should be available (within a month or two of when you read this).

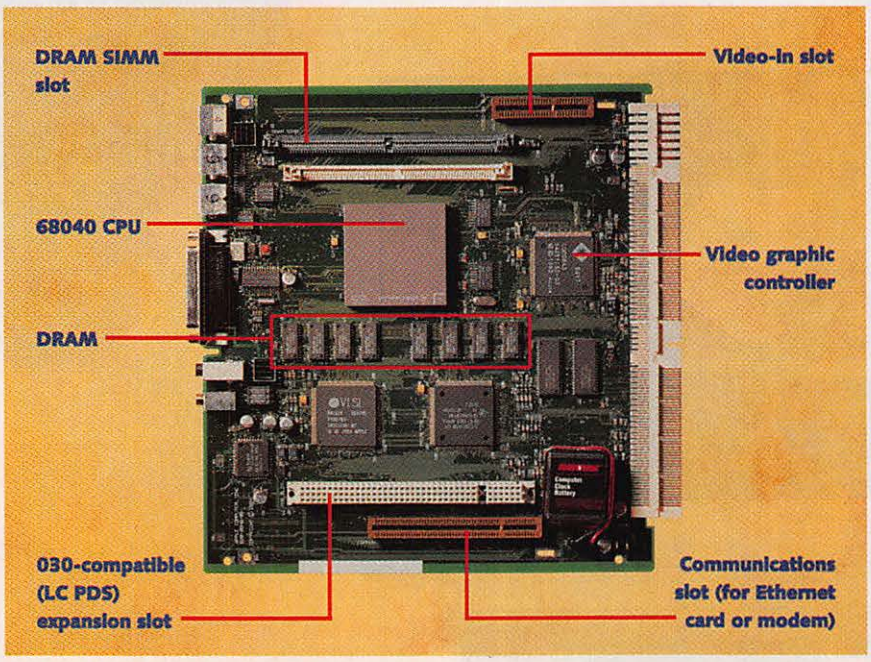
The Box and Board

The Quadra 630 uses a new, compact case design. The front of the case contains a headphone jack and volume-control buttons—convenient alternatives to the rear-panel sound-output jack and the Sound control panel. Just above the volume-control knobs is an infrared sensor for the remote control that accompanies the optional TV-tuner card, described below.

The Quadra 630's logic board lives on a tray that slides out of the case—the scheme is similar to that of some of Apple's big all-in-one Macs, such as the LC 575. In an LC 630 or Performa 630 model, the logic board sports a 68LC040, a version of the 68040 microprocessor that lacks built-in math processing circuitry (generally called a floating-point unit, or FPU). The Quadra 630 uses the full-blown 68040, so it yields superior performance with applications that support floating-point math. (Examples include statistical-analysis, three-dimensional graphics, and high-end spreadsheet software.)

In all 630-series machines, the central processor runs at a speedy 66MHz, but the remainder of the logic board runs at a more leisurely 33MHz. Overall, however, the 630-series machines are strong performers (see "How Fast Are the 630 Macs?"). In Macworld Lab tests performed on preproduction models, the Quadra 630 performed comparably to a Quadra 950, finishing just below the Quadra 800. In entry-level tests, the LC 630 did better than any other low-cost Mac except the LC 575.

The 630 ships with between 4MB and 8MB of memory, depending on the configuration. The logic board has room for a total of 36MB; the computer requires 72-pin, 80-nanosecond SIMMs.



The 630 Family Logic Board The tray-mounted logic board of the 630 series makes maintenance relatively convenient. The only differences between the various 630 models lie in the CPU—a full 68040 for the Quadra 630 compared with a 68LC040 (which lacks an FPU) for all other units. The various 630 machines come with 4MB to 8MB of RAM standard, and all are expandable to 36MB.

The Quadra 630 provides a built-in monitor port and supports monitor sizes ranging from 12 to 15 inches. (The port itself is the standard 15-pin variety, not the new high-density connector used on the Power Macs.) The Quadra 630's logic board contains 1MB of video memory, which enables the computer to support 16-bit color—the standard for viewing QuickTime movies—on monitors as large as 14 inches. The video memory is not expandable; to obtain 24-bit color (the standard for color-image processing) or to drive monitors larger than 15 inches, you must install a video card in the 630's processor-direct slot. That slot is the standard 030 LC Processor Direct Slot (PDS) that is used in many LC, Performa, and low-end Quadra models.

Rather than providing separate video memory (VRAM), the 630 models use a dedicated block of dynamic RAM (DRAM). This yields a less-expensive computer—and slower video performance, since the processor sometimes has to wait in order to access the video memory. Apple endowed the 630 with a variety of buffer circuits designed to eliminate delays, but we still saw mediocre video performance. In Macworld Lab's video tests, the Quadra 630 was only as fast as the under-$1000 Quadra 605. Still, the 630 was faster than the long-discontinued Quadra 700, which we all thought was speedy a year or two ago.

The 630's logic board contains three additional slots. The first one is a video slot that accommodates a video-digitizing card. The second is the TV direct slot; it holds the optional TV-tuner card, which can be installed without removing the logic board. The third slot is a communications slot identical to that of the recently introduced LC 575. The communications slot can accept an internal 14.4-Kbps fax/data modem (several Performa 630 series models include one) or an Ethernet networking card (the Quadra 630 is available with one).

Introducing IDE

Macs have used the SCSI bus to support internal hard drives since the SE and Mac II shipped in 1987. The Quadra 630 departs from this tradition. It still provides a rear-panel SCSI connector for external hard drives, scanners, and other devices, and it still has an internal SCSI connector for an optional CD-ROM drive. But for the internal hard drive, Apple has switched to a bus design called Intelligent Drive Electronics, or IDE. IDE is popular on DOS/Windows machines; the Quadra 630 marks its debut in the Macintosh world.

In an IDE drive, the controller circuitry—the chips that enable the computer to communicate with the drive mechanism—are built into the drive itself. The primary reason Apple used IDE for the 630 is price: the drives cost slightly less than equivalent SCSI drives.

The Macintosh Quadra 630 ships with a 250MB hard drive. Apple is planning 350MB configurations for some Asian Pacific and European markets, but these details weren't final at this writing. In any event, Apple says you will be able to replace the internal hard drive with any standard IDE drive that supports the IDE Identify command and PIO mode 2. Apple says it has tested a variety of drives from different manufacturers and that most work fine.

Video Input and QuickTime

The Quadra 630's TV talents fall into two broad categories: support for video digitizing and support for broadcast and cable

television. The Apple Video System card provides video-digitizing features similar to those of Apple's AV Macs. (In fact, the card uses the same Phillips digitizing chips.) Connect a videocassette recorder, camcorder, or other video source to the card's input jacks, and you can create QuickTime movies, grab individual video frames, and display video in a window on the screen. The price: only $199.

Like an AV Mac, the Apple Video System card provides both composite-video and S-Video connectors. (S-Video generally provides a sharper image because the signal's color and brightness information travel on separate wires; in a composite-video signal, this information is merged.) Unlike an AV Mac, the card also provides a standard RCA-style audio-input jack; so there's no more struggling to find a miniplug-to-RCA adapter when you need to connect the card to an audio source.

The Video System card's video-in-a-window features are similar to those of an AV Mac. You can, for instance, resize the video window to any size, and you can drag windows around and choose menu commands without interrupting the action.

For this and other video-related tasks, Apple designed a new custom chip that contains much of the AV video architecture, including the dual frame buffers that make video in a window possible. Apple says this new chip, located on the 630's motherboard, may be the most complex ASIC (application-specific integrated circuit) it has designed to date.

The new chip doesn't just shrink the AV video architecture, it improves on it in some ways. You can, for example, digitize QuickTime movies even when using 16-bit color. On a Quadra 660AV or 840AV containing just 1MB of video memory, you must switch to 8-bit color to digitize movies—it's an annoyance that 630 owners are spared. Also, where an AV Mac displays TV video in red-green-blue (RGB) form, the Video System card uses a YUV color model (the model used by television), which yields a better picture with less bleeding where colors meet.

For QuickTime digitizing, the Video System card includes a simple program called Apple Video Player. This program lets you grab individual frames, digitize movies, and switch between video sources (see "Apple Video Player"). It's preinstalled in the Apple menu for convenient access.

One key performance factor in the QuickTime world deals with the frame rate—how many frames a digitizing system can record every second. Apple engineers say they were aiming for 15 frames per second at a movie size of 320 by 240 pixels, but prototype systems were falling just short of that goal. In any event, a frame rate in this ballpark would be perfectly adequate for entry-level QuickTime work—and indeed, would be terrific given this system's price. The Video System card also provides a digital-audio-video (DAV) connector that accepts add-on boards that allow recording and playback of full-screen video at 30 frames per second.

Another important phase of any QuickTime project involves compressing the movie so that it uses less disk space and plays back smoothly. This can be one of the most confusing aspects of QuickTime; the compression world is laced with technical jargon and concepts. The Apple Video Player software simplifies things by providing three compression settings: None, Normal, and Most. (For the QuickTime-savvy, Apple Video Player uses QuickTime's video codec—the algorithm that compresses and decompresses video. The Most setting corresponds to the highest-quality video codec setting, Normal corresponds to the normal video setting, and None, of course, means no compression.)

Sound is one area where the 630 falls short of AV and Power Mac standards. The 630 can't record stereo sound (although it can play back stereo QuickTime movies and compact discs), and its sound-playback features use 8-bit sampling resolution rather than the cleaner-sounding 16-bit sampling of the AVs and Power Macs. The 630's audio features are adequate for viewing multimedia CDs and creating amateur-level content, but they aren't intended to meet the needs of professional producers.

AV Macs aren't limited to just video input; they also provide composite-video and S-Video output jacks that let you display Mac screens on television sets and record them using video recorders. The 630 lacks these features, but you can add

The Quadra 630 Family Tree

	Price[A]	Processor	Memory	Hard Drive	Includes CD-ROM	Includes Monitor and Keyboard
Quadra 630	$1199	68040	4MB	250MB	no	no
LC 630[B]	$1299–$1699	68LC040	4MB	250MB	no	yes (14-inch)
LC 630[B]	$1949–$1999	68LC040	8MB	250MB	yes	yes (14-inch)
Performa 630	$1449–$1499	68LC040	4MB	250MB	no	yes (14-inch)
Performa 630CD	$1849–$1899	68LC040	8MB	250MB	yes	yes (14-inch)
Performa 635	$1849–$1899	68LC040	5MB	250MB	yes	yes (15-inch)
Performa 636[C]	$1349–$1399	68LC040	4MB	250MB	no	yes (14-inch)
Performa 636CD[C]	$1649–$1699	68LC040	8MB	250MB	yes	yes (14-inch)

[A] *Apple's estimated street prices.* [B] *Available in K–12 education channel only.* [C] *Available in higher-education channel only.*

A LOW-COST WAY TO GET YOUR MAC ON TV

The $299 Apple Presentation System connects to any Mac with a 15-pin monitor connector—that includes many PowerBooks—and lets you display the Mac's screen image on any NTSC or PAL television. Connect the box to a video recorder and you can record Mac images such as presentations or QuickTime movies.

The Presentation System provides both composite-video and S-Video outputs. Software bundled with the box lets you activate a flicker filter and choose from several display resolutions. In short, the product provides the same video-out capabilities as the AV Macs.

Actually, the Presentation System does the AVs one better by supporting mirroring—the ability to display an image on a Mac monitor and a TV set simultaneously. With the AV Macs, when you switch to TV output, the Mac's monitor goes dark—which complicates life if you haven't connected your cables properly.

Numerous video-out boxes are available from third parties, but the Presentation System's aggressive price is likely to narrow the field—or bring down prices. It's an appealing little box that should find a home in schools or businesses that want to use large-screen monitors for training, in the briefcases of PowerBook owners who want to connect to TV sets for presentations, and on the desks of people who want to record Mac screen images and QuickTime movies.

them—inexpensively—with the new Apple Presentation System (see "A Low-Cost Way to Get Your Mac on TV").

TV Time

Last year Apple built one production run of a computer called the Macintosh TV, which combined a slick but flawed TV tuner with a relatively slow 33MHz 68030 Mac (see *Reviews*, *Macworld*, April 1994). The Macintosh TV is still available (it didn't exactly fly off the shelves), but now there's a better way to put "The Simpsons" alongside your spreadsheets: a Quadra 630 equipped with the $249 Apple TV/Video System card, which includes the Video System card.

The Macintosh TV's biggest flaw is that it forces you to choose between full-screen TV and a full-screen Mac desktop. The Quadra 630's TV/Video System card lets you view television in a resizable window. Another new plus is that the Video System card can digitize QuickTime movies of TV programs.

This opens up some interesting possibilities. A schoolteacher could digitize an interesting scene from an educational program for later playback. After obtaining permission, a businessperson might digitize a financial report from CNN to include in a noncommercial presentation. And doctoral candidates doing disserta-

How Fast Are the 630 Macs?

Best result in each test. Tested with Business Tasks suite. Tested with Entry-Level Tasks suite. Tested with Core Tasks suite.
Products are arranged in decreasing order of overall performance.

TASK-PERFORMANCE TIMES (by system class)

Times are in seconds. Shorter bars are better.

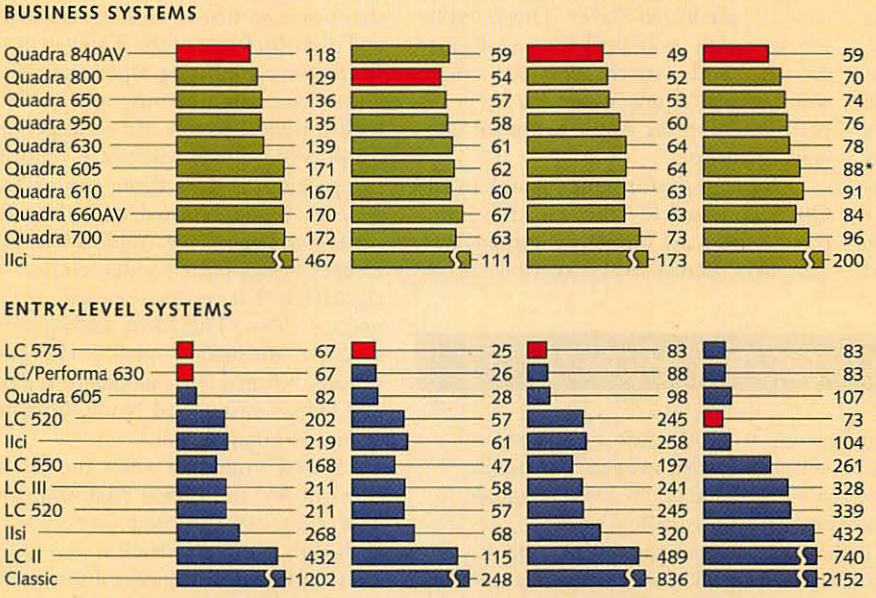
Use these results to compare the performance of systems within a class, such as business and entry-level. For each class, we used a test suite made up of real-world tasks routinely performed by the class's typical user. Thus, the results for one class cannot be compared with results for another class.

Processor — Indicates raw processing power, which affects almost all aspects of performance.

Drive-Access — Indicates performance on tasks that rely heavily on the hard drive.

Video-Display — Indicates performance on tasks that depend heavily on screen-redraw speed.

Floating-Point — Indicates performance on tasks that heavily use a math coprocessor.



CORE-PERFORMANCE INDEX

Times as fast as a Classic (Classic = 1.0).

Use these standard ratings of overall performance, based on a core test suite, to compare systems across classes. Common and Scientific ratings indicate overall performance for common applications and the Mac System, and scientific applications, respectively.

	Common	Scientific
Quadra 840AV	16.5	28.8
Quadra 800	16.4	26.8
Quadra 630	15.1	23.6
Quadra 950	14.7	24.6
Quadra 650	14.6	24.9
LC/Performa 630	12.5	12.8
Quadra 660AV	12.4	21.4
Quadra 610	12.1	20.9
Quadra 700	11.9	19.4
LC 575	12.0	13.1
Quadra 605	10.3	10.9
LC 550	5.1	5.2
IIci	4.9	9.4
LC 520**	4.6	9.0
LC 520	4.1	4.2
LC III	4.0	4.1
IIsi	3.3	3.3
LC II	1.9	1.9
Classic	1.0	1.0

**Does not include rendering test that requires FPU.*
***With FPU.*

BEHIND OUR TESTS

To gauge the performance of the LC/Performa 630 and the Quadra 630, Macworld Lab ran three sets of real-world tests. The Core-Performance set gauges relative performance against other Macs by using applications that test basic performance attributes, which we report in terms of times as fast as a Classic.

The Business Systems set consists of a mixture of tasks typical of professional business users. The programs used include Adobe Photoshop, Aldus FreeHand, QuarkXPress, Microsoft Excel, Microsoft Word, Claris FileMaker Pro, and Specular Infini-D.

The Entry-Level Systems set is a mixture of typical home- or small-office tasks. The programs used include Claris FileMaker Pro, ClarisWorks, Deneba UltraPaint, Microsoft Word, and Microsoft Excel.

The new machines are targeted for entry-level users, yet are more powerful than most of their predecessors. We tested the LC/Performa 630 against other entry-level systems, and the Quadra 630 (which has a built-in FPU) against other business systems. For non-floating-point-intensive tasks, both machines should perform the same.

For the new Macs, we tested prototypes. In all cases, we used an external Quantum-based 230MB hard drive, whose speed ensures that we consistently measured the Mac's bus performance.

We also used the Apple 14-inch monitor for all systems that don't have a built-in monitor; this ensured that we measured only the video circuitry's performance.

—Macworld Lab testing supervised by Mark Hurlow

tions on the sociological impact of the cartoon show "Ren and Stimpy" will be able to illustrate their efforts vividly. Remember, digital video uses astronomical amounts of disk space; it remains to be seen whether these scenarios will be practical, given the relatively small hard drives that ship with the Quadra 630 (though you can also do still captures of single video frames).

The TV/Video System card's software is similar to that of the Macintosh TV (see "TV Tuning"). A control panel lets you activate an automatic scan mode in which the card scans each of the 181 channels it's capable of receiving and locks out inactive ones, so you can channel-surf without static. Other options let you activate closed-captioning and assign text labels, such as call letters or network names, to channels. You can specify a keyboard shortcut for displaying the TV window, and you can specify a password that must be typed before the window appears. (The security system is as easy to defeat as the Mac TV's: just yank the TV Preferences file out of the System Folder and restart, and the passwords are gone.) And a handy new Reminder option lets you program the TV/Video System card to automatically display given channels at specified times—no missing "Home Improvement" because you're mired in financial forecasts.

The TV/Video System card includes a compact remote control that lets you not only control the TV functions, but also turn the computer on and off and play audio compact discs with the 630's built-in CD-ROM drive. (You can also use a programmable universal remote control to control the 630's tuner and CD-ROM.) The CD-ROM drive itself is Apple's latest, the CD-300i Plus, whose motorized CD tray does away with annoying CD caddies.



Apple Video Player The Apple Video Player utility provides a simple, one-window interface for choosing the video source, capturing a single video frame, and recording a QuickTime movie.

A Wider View

One problem with watching video in a window is that you might wish for a larger screen in order to also have room for your document windows. Apple hopes to fulfill your wish with its new, 15-inch Multiple Scan 15 Display. (Now you know one of the reasons why the Quadra 630's on-board video circuitry supports monitors of up to 15 inches.)

The Multiple Scan 15 Display uses a flat, Hitachi-built picture tube that provides a 0.28mm dot pitch. (Dot pitch is one of many ways to measure potential image sharpness—the smaller the dot pitch, the better. In this regard, the Multiple Scan 15's screen falls short of the Sony Trinitron screens Apple uses in many of its 14-inch monitors; those units provide a 0.26mm dot pitch.)

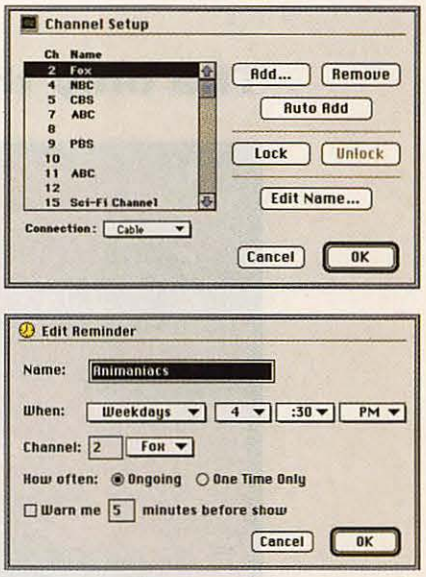
The Multiple Scan 15 Display provides built-in stereo speakers and a headphone jack, but it isn't as ideal a multimedia monitor as Apple's costlier AudioVision 14. The speakers are on the sides instead of up front, and there's no microphone or external audio-input jacks. But the Multiple Scan 15 does provide more screen real estate, supporting resolutions of up to 1024 horizontal pixels by 768 vertical ones. (Note that the 630 is limited to a maximum resolution of 800 by 600.) The Multiple Scan 15 also supports 800 by 600 and 640 by 480, and lets you switch between them without restarting the Mac.

The new monitor also provides an energy-saving feature: a control panel lets you specify that the monitor power down after a specified period of Mac inactivity. Both the monitor and the 630 itself join a growing number of Apple products—from Macs to monitors to printers—that meet the Environmental Protection Agency's Energy Star criteria.

The Last Word

In the new 630 family, Apple has refined some of its best TV- and video-related technologies to create what may be the least expensive multimedia computer available. Apple learned from the mistakes it made in the Macintosh TV, improved on the AV video architecture, and borrowed from the PC world to cut costs.

Of the new machines, the Quadra 630 is my favorite, thanks to the superior floating-point performance its 68040 provides. But most people don't need this extra measure of speed and will be well served by one of the Performa 630-series machines. Similarly, educators who frequently use television, videotapes, and multimedia will find a lot to like in the LC 630. The only drawback for them is that the LC 630 lacks the all-in-one-box convenience and security of other models such as the LC 575.



TV Tuning The software that accompanies the TV/Video System card lets you configure the tuner to lock out inactive channels, specify TV station call letters and network affiliations, and password-protect access to specific stations (top). You can also specify that the TV window appear automatically so you don't miss a single program (bottom).

What's particularly exciting about the 630 family is that its low cost didn't come at the expense of innovation. Indeed, there are more slick new technologies—the TV capabilities, the infrared sensor (which Apple says third-party developers can use to create remote-control functions for presentation programs), the new video chip—in the 630 series than there were in the low-end Power Mac 6100/60.

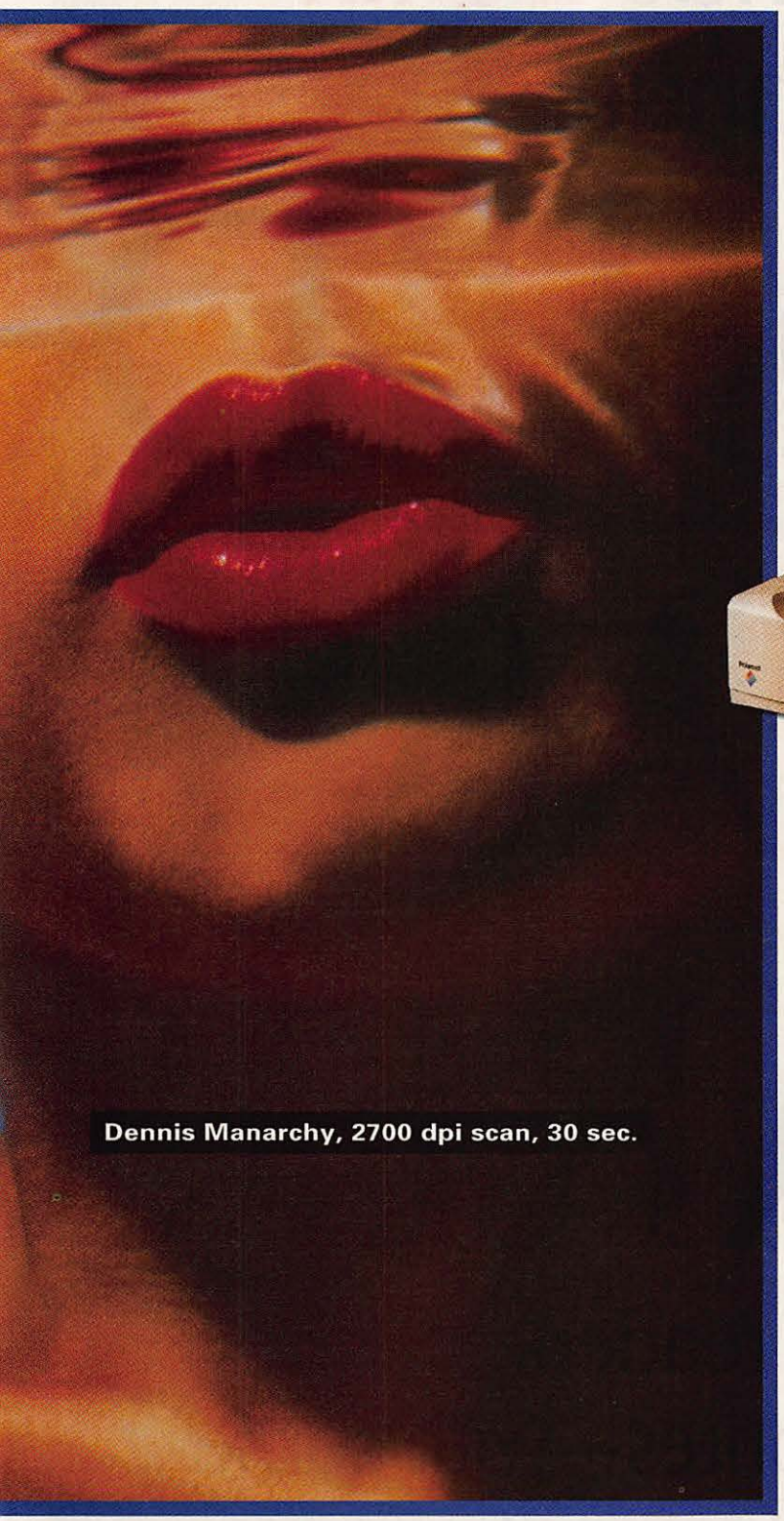
As for the new Apple Presentation System, it should become popular among presenters, multimedia buffs, and educators—the only people who won't like it are the numerous third-party developers who sell more-expensive video-out hardware. The release of this box—and the Video System card, which makes even SuperMac's VideoSpigot seem overpriced—proves that Apple is no longer a company that goes out of its way to avoid competing with third-party developers. In a way, the new world order of low-cost computing made that change inevitable. Apple can't worry about stepping on a few toes when running with elephantine competitors like Compaq, IBM, and Dell. **m**

Contributing editor JIM HEID has been writing about new Macs since the fall of 1983. He's the author and producer of the third edition of the *Macworld Complete Mac Handbook Plus Interactive CD* (IDG Books Worldwide, 1994), which not only has the longest name of any Mac book, but also covers the Quadra 630.

The only thing missing is the wait.



Dennis Manarchy, F-8 at 1/64 sec.



New SprintScan 35 Slide Scanner from Polaroid—Brilliant Scans in Under a Minute.

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SprintScan 35 scans slides at 2700 dpi in under a minute.

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* Source: Evaluations by Rich and Associates, June 1994. † Suggested list price. Actual purchase price may vary.
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Circle 295 on reader service card

See us at Macworld in Boston from August 2-5. Booth #3100 Bayside

Macworld's Eighth Annual

WORLD-CLASS AWARDS

Our readers pick their favorites—with some surprising results

PHOTOGRAPHY BY MARK JOHANN

BY DAN MUSE For 11 months out of the year, the editors at *Macworld* evaluate products and pass on our buying recommendations to you. But once a year we turn the tables. In April, we asked you to assess your level of satisfaction with up to ten products that you regularly use, and to vote for the most promising hardware and software newcomers. Then we and The Research Spectrum, an independent research company, analyzed the ballots. On the basis of your judgments, we now announce the 1994 World-Class Awards.



This is not merely a popularity contest. While the number of mentions a product received was a factor, we put more stock in your 1 to 10 ratings—the passion index, as we like to call it. We're usually able to anticipate some of the winners. Products such as Adobe Photoshop and Microsoft Excel are by now almost as much fixtures in the Mac universe as the Finder, so it's no surprise that they win year in and year out. In fact, of the 50 winners, fully half are back for at least their second time. This is not mere name-brand loyalty; to their developers' credit, these products do keep getting better. World-Class winners among products new to the market are often tougher to predict. While we expected to see the Power Macintosh top out as this year's most promising new hardware arrival, we were eager to see what you thought of this year's software crop. A multitude of excellent new products came to market, and we wholeheartedly concur with your insightful selection of Connectix Corporation's RAM Doubler as the best new software. Something we didn't predict was how closely this year's World-Class Macintosh models would mirror last year's list. Again at the top of the list were the Quadra 950 and the PowerBook 180, joined by the Quadra 800 and the Quadra 650. Ironically, perhaps, Apple has since ceased producing both the Quadra 800 and the PowerBook 180. Our open-ended ballots do not yield winners in every conceivable category. So if you're wondering why we have no OCR category, for example, it's because the category didn't garner enough responses to give us a clear call. *Macworld* congratulates all 32 companies. And as you look over the following pages, pat yourself on the back for choosing a great crop of 1994 World-Class products. Finally, congratulations to Keiichi Sato of San Francisco, whose name was randomly chosen from over 6200 respondents to receive a Power Macintosh 6100 system.



SYSTEMS

Desktop
Apple Computer/Quadra 650, 800, and 950

Notebook
Apple Computer/ PowerBook 180

Accelerator
DayStar Digital/accelerators

Monitor
NEC Technologies/MultiSync FG series

Video Board
Radius/PrecisionColor series

Input Device
Kensington Microware/Turbo Mouse

The Quadra 950 and PowerBook 180 reclaim their throne, joined by the Quadra 800 (discontinued) and 650. We know you hold onto your Macs, but seldom unimproved; your choice for accelerators, the DayStar line. The Radius PrecisionColor board and NEC MultiSync FG are your picks for a better picture. And the Mac world beat a path to Kensington's door to pick the Turbo Mouse.



SYSTEMS

DESIGN

CAD
Graphsoft/MiniCad+

Modeling/Rendering
Specular International/Infini-D

Creating realistic 3-D models is a daunting challenge. MiniCad+ takes the award for CAD; Infini-D, for 3-D modeling and rendering. Both programs are already available in native Power Mac versions.



DESIGN

GRAPHICS AND PUBLISHING

Page Layout
Tie—Quark/QuarkXPress and Aldus Corporation/Aldus PageMaker

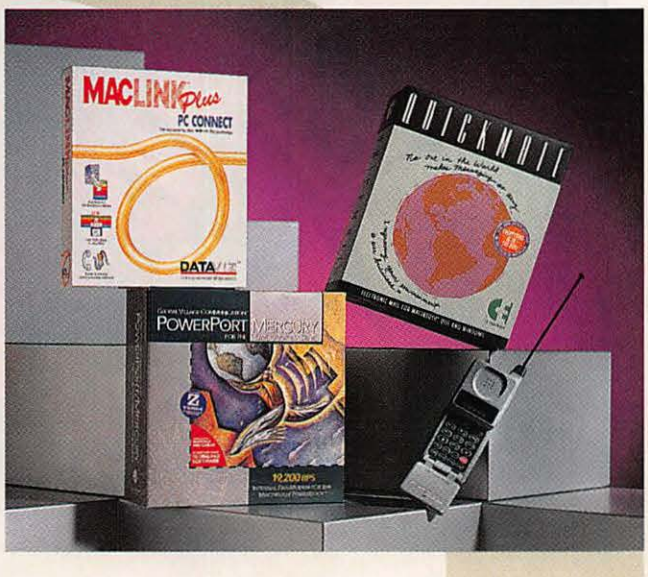
Illustration/Drawing
Adobe Systems/Adobe Illustrator

Image Editing
Adobe Systems/Adobe Photoshop

QuarkXPress and PageMaker tie. Illustrator edges out FreeHand. But Photoshop wins for editing images.



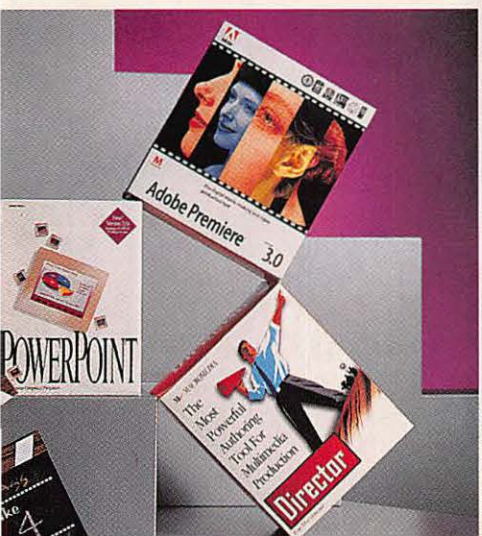
GRAPHICS AND PUBLISHING



CONNECTIVITY



PRINTER



PRESENTATION

CONNECTIVITY

Communications Software
Alverson Software/ZTerm (shareware)
Electronic Mail
CE Software/QuickMail
Cross-Platform Connectivity
DataViz/MacLinkPlus series
Modems
Global Village Communication/PowerPort series

With so many ways to get connected—and so many reasons to do so—the insular Macophile is a rarity these days. Retaining their titles are Global Village Communication's PowerPort modems for PowerBooks and the popular shareware from Alverson Software, ZTerm (not pictured). Business users gave the nod to CE Software's QuickMail for electronic-mail software. And when you need to communicate with a foreign operating system, MacLinkPlus products make world-class ambassadors, handling both file exchange and file translation.

PRINTER

Ink-Jet
Apple Computer/StyleWriter II
Color
Hewlett-Packard/DeskWriter 550C
Laser
Apple Computer/LaserWriter Select 360

No surprise to find Hewlett-Packard and Apple divvying up these awards. The StyleWriter II returns as the ink-jet champ, but HP's DeskWriter 550C and Apple's LaserWriter Select 360 bring new blood to the color and laser divisions.

PRESENTATION

Presentation Software
Microsoft Corporation/Microsoft PowerPoint
Authoring
Macromedia/Macromedia Director
Video Editing
Adobe Systems/Adobe Premiere

In today's business environment, few speakers venture out in front of an audience without slides, animations, or films, and few corporate communications departments are without at least one of these World-Class Award–winning products—Microsoft PowerPoint, Macromedia Director, and Adobe Premiere.



UTILITIES

Writing
Baseline Publishing/
Thunder 7
System Enhancement
Now Software/Now Utilities
Printer Utility
GDT Softworks/PowerPrint
Font Utility
Adobe Systems/Adobe Type
Manager

Macintosh users are ever on the lookout for enhancements. This year's World-Class Award–winning system enhancements are Baseline Publishing's Thunder 7, a versatile interapplication spelling checker; GDT Softworks' PowerPrint, which enables Macintoshes to print to a multitude of non-Mac printers; Adobe Type Manager, from Adobe Systems, for getting a good approximation of the fonts you need; and Now Utilities, from Now Software, a nifty toolbox for inveterate tinkerers.

MUSIC

Coda Music Technology/
Finale

Coda Music Technology's Finale, a high-end package that accepts input from MIDI instruments and the Mac keyboard and turns it into elegant sheet music, is still the standard against which other music programs are measured.

STORAGE

Hard Drive (all capacities)
APS Technologies/APS
hard drives
Alternative Storage
APS Technologies/APS
DAT drive
Backup/Storage Utility
Aladdin Systems/StuffIt series

APS takes the honors this year for both best hard drive and best alternative storage. But since you can never have enough storage, Aladdin's StuffIt series is your choice as the best utility for making the most of a valuable commodity.



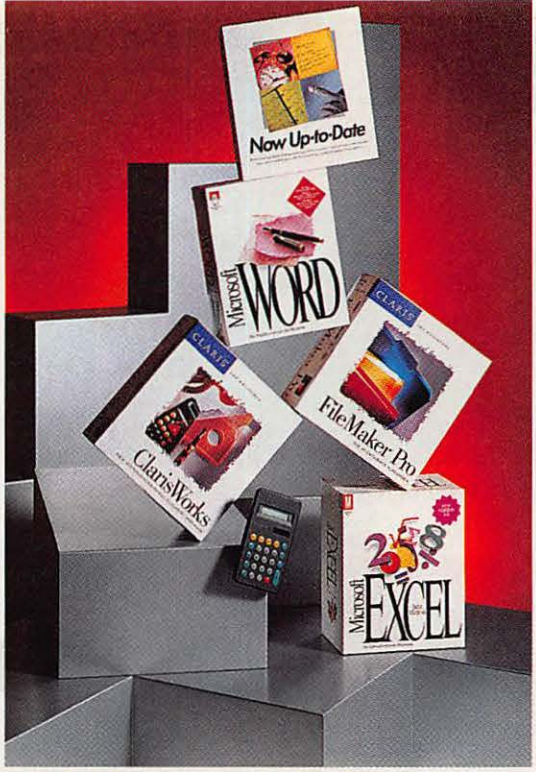
UTILITIES



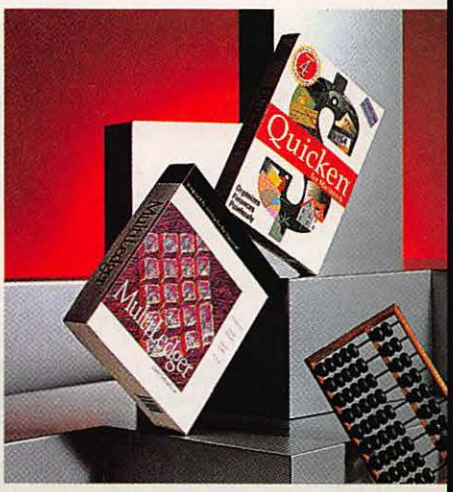
MUSIC



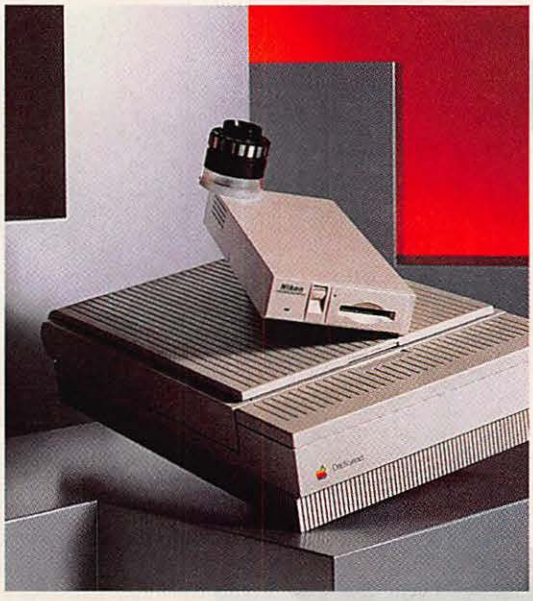
STORAGE



PRODUCTIVITY



FINANCE



SCANNER



EDUCATION AND ENTERTAINMENT

PRODUCTIVITY

Spreadsheet
Microsoft Corporation/
Microsoft Excel
Word Processing
Microsoft Corporation/
Microsoft Word
Database Manager
Claris Corporation/
FileMaker Pro
Integrated Software
Claris Corporation/ClarisWorks
Personal Information
Manager
Now Software/Now Up-to-Date

Here's a category where it's hard to topple the market favorites. Last year ProVue's Panorama upset Claris FileMaker Pro, but no surprises this year. This year's list of productivity winners looks like a who's who of application software.

FINANCE

Accounting
CheckMark Software/
MultiLedger
Personal
Intuit/Quicken

CheckMark's MultiLedger and Intuit's Quicken, the World-Class winners for accounting and personal finance, respectively, both take an integrated approach to financial management, helping you make sense of your dollars and debits.

SCANNER

Reflective Scanner
Apple Computer/Apple
OneScanner
Transparency Scanner
Nikon/LS-10 Coolscan

The Apple OneScanner and the Nikon LS-10 are clear winners in a category that divided itself into two.

EDUCATION AND ENTERTAINMENT

Education
Brøderbund Software/Living
Books series
Entertainment
Brøderbund Software/Myst

If there was any doubt that the software market is rushing to CD-ROM, Brøderbund's two winning products clear it up. The Living Books series and Myst dominated the education and entertainment voting, respectively, proving that Mac owners have CD-ROM drives and use them.



DEVELOPMENT AND ANALYSIS

Scientific Analysis
Synergy Software/
KaleidaGraph
Programming Language
Zedcor/FutureBASIC

FutureBASIC, Zedcor's powerful yet easy-to-learn iteration of BASIC, won readers' accolades for demonstrating the elegance of simplicity. KaleidaGraph, from Synergy Software, is a stand-out graphing program that's particularly lauded by scientists who use the Mac.

MOST PROMISING NEWCOMER

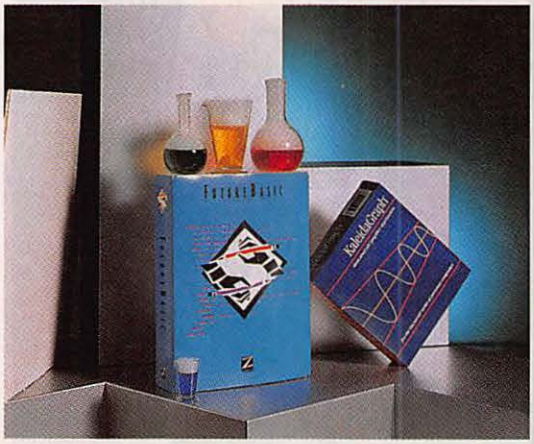
Hardware
Apple Computer/Power
Macintosh series
Software
Connectix Corporation/
RAM Doubler

If ever two products spoke to the perpetual desire for more computing power, these two newcomers do. Connectix Corporation's RAM Doubler is ingenious software that effectively fools your Mac into thinking it has twice the memory that is actually installed. The long-anticipated Power Macintosh 6100, 7100, and 8100 are making good on their promise of exceptional processing power and cross-platform compatibility.

BEST CUSTOMER SUPPORT

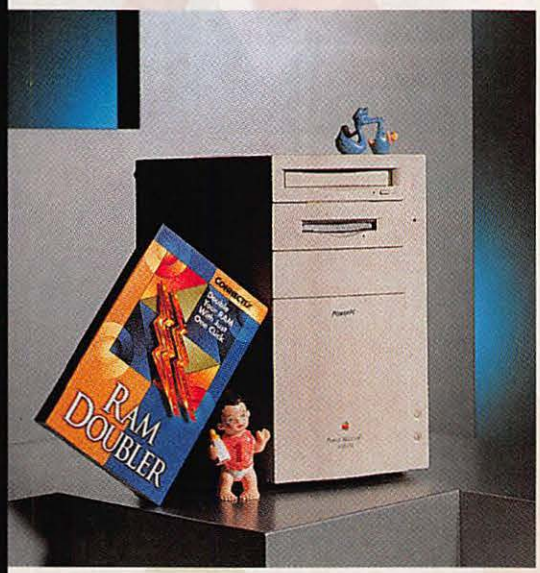
Hardware
Tie—APS Technologies and
Apple Computer
Software
WordPerfect Corporation

Awards for customer service go out this year to WordPerfect Corporation (for software support), APS Technologies, and Apple Computer (the latter two tied for hardware support)—three companies that understand the value of maintaining a satisfied clientele.



DEVELOPMENT AND ANALYSIS

MOST PROMISING NEWCOMER



BEST CUSTOMER SUPPORT



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FastTrack Schedule from AEC Software is so quick, powerful and easy to use, no wonder it's a hit with Fortune 500 companies like 3M™, Procter & Gamble, GE, and McDonnell Douglas. In fact, leading computer publications like *Windows Magazine, MacWEEK* and *MacUser* have awarded it the highest ratings in its class.

In just minutes, you can create project schedules that will enhance both your productivity *and* presentations. Plus, there's no need for cumbersome project management packages or time-consuming drawing programs.

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Circle 44 on reader service card

Let's talk scanned image quality.

Test 1

COLOR REGISTRATION ACCURACY





MICROTEK SCANMAKER IISP

A good test for RGB color registration is to scan black and white line art in RGB color mode. When magnified and displayed on the monitor you should not see red, green or blue pixels, only gray and black. Microtek's ScanMaker IISP image on the left shows no red, green or blue pixels. Hewlett Packard's ScanJet IIcx, however, shows too many red, green and blue pixels.

BEFORE YOU BUY ANY SCANNER, TAKE A GOOD, HARD

Before you lay down your hard-earned bucks for a single-pass color desktop scanner, here's a simple test you can perform to see for yourself how well it handles color registration.

Scan black and white line art in RGB color mode. Then enlarge and examine the results.

If the colors are properly aligned — or "registered" — the lines will look black. If you see dots of red, green or blue at the edge, the scanner's color registration leaves something to be desired.

SEE FOR YOURSELF.

In a recent direct comparison between the Hewlett-Packard ScanJet IIcx and the Microtek ScanMaker IISP, the ScanMaker clearly shows superior color registration. The H-P ScanJet IIcx, well, leaves something to be desired. And because poor registration is only one factor that causes inaccurate color, it further degrades color quality when accuracy problems already exist. So color registration is only one of the quality checks you should be making if you want the best scanner for your money.

Another is color accuracy — how close does the color of the scanned image come to the color of the original? The Microtek ScanMaker IISP uses an award-winning system called Dynamic Color Rendition (DCR) which automatically calibrates and



The scanner to ask for, **Microtek's ScanMaker IISP**, *comes complete with Adobe Photoshop LE for Windows or Macintosh and the DCR color calibration/correction system including software and an IT-8 calibration target. Or ask for the* **ScanMaker IISPX** *with the full-version of Adobe Photoshop. Scanner shown with optional Transparent Media Adapter. Optional Automatic Document Feeder also available.*

SEE US AT
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August 2nd-5th • Booth #1612

Test 2

COLOR ACCURACY



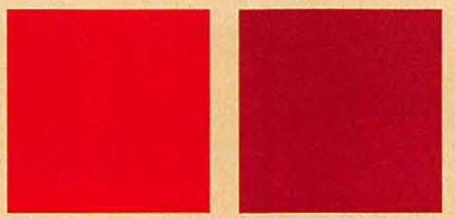
H-P SCANJET IIcx



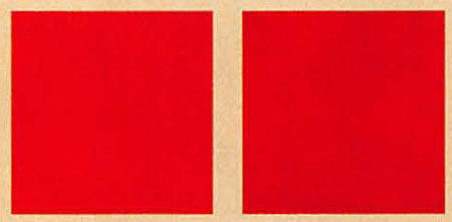
PROCESS MAGENTA



A WARM RED



MICROTEK IISP H-P IIcx



MICROTEK IISP H-P IIcx

Color accuracy is important in most of the images we scan. To test color, we scanned color swatches from an industry standard color-matching system. Once again, Microtek's ScanMaker IISP easily outclassed the well-known ScanJet. The disparity is even more apparent when the Transparent Media Adapter is used. H-P's stationary "light table" light source results in uneven accuracy, while Microtek's moving light source gives consistently more accurate color.

LOOK AT REGISTRATION AND COLOR ACCURACY.

corrects colors to make them virtually indistinguishable from the original.

To prove it, we scanned a 100% magenta color swatch on the ScanJet IIcx and the Microtek ScanMaker IISP. The results, as you can see, show the ScanMaker IISP's color accuracy is superior to H-P — or anyone else. In fact, in a scanner comparison published in the February 8th edition of *PC Magazine*, the editors said, ***"...the ScanMaker IISP's color output was clearly the best of any scanner in our survey."***

PC MAGAZINE EDITORS' CHOICE
February 8, 1994
Microtek ScanMaker IISP

SOMETHING ELSE H-P CAN'T SAY.

Hewlett-Packard makes some great printers. They also make computers and a host of other electronic equipment.

Microtek makes scanners. Period. In fact, Microtek pioneered desktop scanners. So our history with scanners is longer and deeper than anyone else you can name. Including H-P.

DON'T BUY A SCANNER UNTIL...

If you're considering a scanner — anybody's scanner — don't write the check until you've seen the Microtek ScanMaker IISP. For your free copy of *The Scanned Image* (an easy introduction to scanners), more information or to find out where to see the IISP for yourself, call us at **800/654-4160** or fax a request to 310/297-5050.

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Before you buy a scanner, let's talk.
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Prices and software bundles are subject to change. Test results may vary with specific company products. SM11SP-MW-994

Circle 287 on reader service card



Great machines with less-than-great technical support: from top to bottom, the Apple StyleWriter II, the Texas Instruments microLaser Pro 600, and the Apple Personal LaserWriter 320.

MW LAB

MACWORLD LAB TESTS THIRTEEN AFFORDABLE INK-JET AND LASER PRINTERS

Personal Printers

by Jim Heid

What makes the perfect personal printer? It depends on the person. A freelance graphic artist working at home has different needs than a college student with term papers to print. Weight-conscious business travelers have their own requirements, as do small businesses that have a couple of DOS PCs as well as Macs. No one printer is perfect for every person.

Nonetheless, you'll still find several common requirements on every buyer's shopping list. First, the printer has to be affordable—preferably well under $1000, but no more than about $1400. (We tested only printers that sell for $1400 or less based on vendor-supplied street-price estimates at the time of testing.)

Second, it has to be compact—dormitories, home offices, hotel rooms, and small businesses don't have room for a picnic cooler–size printer. And third, it has to produce great-looking output—none of that chunky dot matrix stuff.

Making demands like these ten years ago would have earned you a jacket with sleeves that tie in the back. Today, there's a large selection of printers that meet these demands—as this Macworld Lab survey of 13 monochrome (black-and-white) personal printers proves. The growth of the home-office market has inspired printer manufacturers to create remarkably capable machines that sell for surprisingly little. When sales volume is up, manufacturing costs go down, and prices fall with them.

The street prices of the printers tested here run from $289 to approximately $1400—a wide range that reflects the fact that there's no single definition of a personal printer. What's more, that $1400 upper limit is more of a cloud bank than a ceiling. A fuzzy boundary separates high-end personal printers from low-end workgroup printers—the kind of machines a medium-size office might attach to a network. For this reason, I'll also spotlight some printers that cost slightly more than $1400 but provide features more typically associated with workgroup workhorses.

In addition to the 13 desktop printers tested, we also examined several portable printers designed to be PowerBook travel mates (see "Printers for the Road"). Nearly every portable printer we looked at has major-league limitations—slow performance, mediocre output quality, awkward paper handling. But they can run on batteries, which no desktop machine can.

Ink-Jets: Under $300

With prices starting at under $300, ink-jet printers do the best job of combining high-quality output with low cost. They

ERNIE FRIEDLANDER

accomplish this by using very simple printing mechanisms and by making the host machine—the Mac connected to the printer—handle the calculations required to position text and graphics on the page. This technique of making the host do most of the work is common in the econoprinter world; the downside is that the Mac slows as it crunches through print jobs.

The star of an ink-jet printing mechanism is a disposable print head that contains a supply of water-based ink and an array of microscopic, tightly spaced nozzles. The print head is mounted in a carriage that travels left and right across a page. As it moves, the head sprays fine streams of ink onto the paper.

It sounds sloppy, but a decade of evolution has yielded mechanisms capable of printing up to 600 dots per inch (dpi). That's theoretically sharper than most low-end laser printers, but the theory falls apart on paper, whose fibers can suck up ink like a paper towel and give text a fuzzy-edged look (see "Getting the Best Text"). Although ink-jet machines can print on plain paper—indeed, the results are perfectly acceptable for proofreading and casual correspondence—you get the sharpest results with the special coated papers that most manufacturers sell.

The biggest news in personal ink-jets comes from Hewlett-Packard, whose ThinkJet created this product category ten years ago. HP's $365 DeskWriter 520 provides 600-by-300-dpi output—600 dots horizontally and 300 vertically. Previous DeskWriters provided 300-by-300-dpi resolution; in the new machines, HP doubled the horizontal resolution by finely controlling the left-right positioning of the print head. The DeskWriter 520 also provides HP's Resolution Enhancement Technology (RET), previously found only on HP's laser printers. RET smooths character edges by adjusting the position of ink dots.

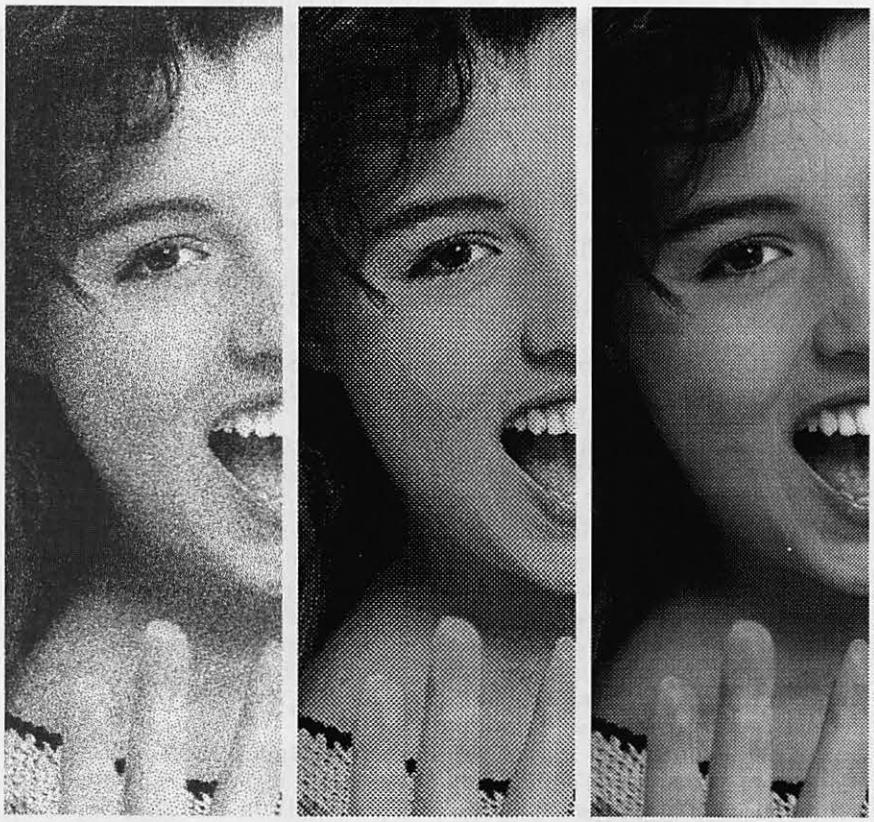
The DeskWriter 520's enhancements do yield better output quality than the earlier DeskWriter provided, but it isn't significantly better than that of the closest competitor, Apple's $289 StyleWriter II. This printer uses a Canon-built mechanism that produces 360 dpi. That sounds significantly coarser than 600 by 300, but the effect isn't dramatic. The DeskWriter 520 produced slightly clearer text in sizes smaller than 10-point.

Each printer has its strengths and weaknesses. The StyleWriter II is much more compact than the DeskWriter 520—the StyleWriter weighs only 6 pounds, versus 14, and it's several inches narrower. If you don't need battery operation, the StyleWriter II is a good choice for a portable printer. The DeskWriter 520, however, provides better envelope-printing features—it automatically senses envelopes and adjusts its print head to accommodate their extra thickness. With the StyleWriter II, you must remember to manually flick a lever to switch between cut-sheet and envelope modes. The DeskWriter 520 also holds 20 envelopes to the StyleWriter II's 15.

The DeskWriter 520 has the edge in network sharing. Both it and the StyleWriter II can be shared on a network, but the StyleWriter II requires that the host Mac process jobs being printed by other Macs on the network. If yours is the host Mac, you'll notice a slowdown when other users print. The DeskWriter 520, in contrast, makes each Mac handle its own print jobs—a better approach. (Keep in mind that both printers are too slow for large- or even medium-size network use—in this price stratum, network sharing means two or three Macs.)

We tested a third desktop ink-jet: Brother International's HJ-400, but we weren't impressed with it. Besides turning in some of the slowest times in this roundup, the printer doesn't support gray-scale printing (you can't print scanned images, for example).

Image Quality Varies Widely Ink-jet printers simply cannot keep pace with laser printers when it comes to showing details in a photographic image. Even output from the Editors' Choice ink-jet selection, the Hewlett-Packard DeskWriter 520 (left), is obviously less distinct than samples from either of the laser units represented here. The best sample, from the 600-dpi Texas Instruments microLaser Pro (right), shows fine details (such as the woman's hair and the stitching in her sweater) without the slightly posterized effect seen in the print from the Apple Personal LaserWriter 320.



DeskWriter 520 | Personal LaserWriter 320 | microLaser Pro

PHOTO COURTESY OF DUNN TECHNOLOGY, INC.

The Laser's Edge

One floor up from the ink-jet bargain basement are the low-cost lasers. What does the extra cash buy? Faster printing, for one thing, thanks to a laser printer's photocopier-like print engine, which prints an entire page in one pass instead of working its way from left to right and top to bottom.

Most personal lasers can print 4 to 6 pages per minute (ppm); the actual speed depends on the print job's complexity. Time-consuming jobs typically include complex page layouts, large scanned images, and documents containing many fonts and sizes.

You also get sharper output. Not only is laser output immune to the wicking that plagues ink-jet printers, but also many lasers provide output-enhancement technologies that play tricks with the laser to smooth jagged character edges and produce sharper halftones of scanned images.

I tested four portable printers and found that portability and capability are on opposite ends of the seesaw. The better the printer, the larger and heavier it is. The smaller the printer, the slower and more limited it is. It's an adventure in compromise, and it's difficult to find a winner.

The two most capable machines are Hewlett-Packard's 4.3-pound DeskWriter 310 and Apple's 4.5-pound Portable StyleWriter. The $379 DeskWriter 310 is an interesting bird. In its most portable configuration, it measures 2.5 inches high by 12 inches wide by 5.75 inches deep. It also holds just one sheet of paper at a time; you must hand-feed the printer for multipage documents. An optional ($99) sheet feeder accepts up to 60 sheets. Another $49 buys a kit that enables the printer to print in color—a nice plus.

Apple's $289 Portable StyleWriter is a bit bulkier than the DeskWriter 310. The StyleWriter also handles just one sheet of paper at a time; a 100-sheet feeder costs $85. The Portable StyleWriter can't print in color—in fact, it can't even print in gray-scale. True, most people don't print scanned images in their hotel rooms, but I'd bet many of them print graphs from spreadsheet programs or business graphics from presentation packages. The Portable StyleWriter is not suited to these jobs; think of it as a text-only printer. You could work around the lack of gray-scale output by formatting graphs to use patterns rather than colors or gray shades, but given these compromises you might be better off buying the HP DeskWriter 310 instead.

The $399 Citizen America Notebook Printer II weighs a little more than 2 pounds and is the only portable printer tested that can hold more than one sheet of paper (it holds 5). The Notebook Printer II has a unique emulation mode that lets it imitate an Apple StyleWriter II. With the printer in this mode, you can use the StyleWriter II driver (included with System 7, but not with the Notebook Printer II) to print scanned images using Apple's GrayShare technology; the scheme works reasonably well. The printer can also print in color using Citizen's driver, but don't bother—the quality is poor.

Finally, there's GCC Technologies' $329, 2½-pound WriteMove II. This printer's output isn't bad, but loading paper is guaranteed to frustrate. The Notebook Printer II is a better miniprinter.

I can't enthusiastically recommend any of the four portables tested. If you need occasional hard copy when on the road, consider using your PowerBook's modem to fax a document to the hotel where you're staying. If you need better quality or tighter security, then consider HP's DeskWriter 310. It strikes the best balance on the portability/capability seesaw.

Portable Printers at a Glance

Company	Phone	Product	List Price	Number of Fonts	Paper Capacity/ Optional Feeder Capacity (in sheets)	Batteries Included/Pages per Charge	Weight (in pounds)
Apple Computer	408/996-1010, 800/767-2775	Portable StyleWriter	$289*	39	1/100	yes/50	4.5
Citizen America	310/453-0614, 800/477-4683	Notebook Printer II	$399	0	5/NA	no/50	2.1
GCC Technologies	617/275-5800, 800/422-7777	WriteMove II	$329	0	1/NA	yes/16	2.5
Hewlett-Packard	800/752-0900	DeskWriter 310	$379	35	1/60	no/100	4.3

*NA = not applicable. *Vendor's estimated street price.*

Laser printers also support a wider range of papers. (Ink-jets don't always perform well with highly textured stocks, nor do they handle stiff card stock.) Also, laser output doesn't smear when it gets wet; ink-jet output can. And most laser printers provide PostScript, which is essential for professional publishing work and for printing illustrations created with PostScript-oriented draw programs such as Adobe Illustrator and Aldus FreeHand. PostScript printers are also easy to share on a network, even one containing both PCs and Macs.

To produce printers that will sell for less than a grand, many companies cut features or corners, or both. Some printers also contain a new generation of minimalist print engines designed to be cheap to build—and buy. Consider Apple's $689 Personal LaserWriter 300 and $949 Personal LaserWriter 320. Instead of providing adjustable guides (handy for feeding envelopes) with their manual-feed slots, each of these printers provides one fixed guide that's molded into the printer's paper tray. It is the little cost-cutting measures like these that help bring prices down.

QuickDraw Lasers: How Low Can They Go?

The largest selection of under-$1000 lasers comes from Apple itself, and the $719 LaserWriter Select 300 is one of the best. This is the only non-PostScript, under-$1000 laser printer available that provides resolution enhancement for both text and graphics. (It does need a 4MB printer memory upgrade for enhanced graphics output, though.) Scanned images printed with Apple's PhotoGrade image-enhancement technology look far sharper and more realistic than do images printed with unenhanced 300-dpi printers.

Like the ink-jet printers tested, the LaserWriter Select 300 relies on the Mac to process print jobs. And like Apple's StyleWriter II, the Select 300 can be shared on a network—but the host Mac slows while handling others' jobs. Apple sells a PostScript upgrade that turns the Select 300 into the LaserWriter Select 310. We tested the 310 last year and found it slow and unexciting.

Don't confuse the LaserWriter Select 300 with the Personal LaserWriter 300—they're completely different. The LaserWriter Select 300 uses a 5-ppm, Fuji-built print engine; the Personal LaserWriter 300 uses a smaller, lighter-duty, 4-ppm Canon engine. The Personal LaserWriter 300 (not tested) supports neither FinePrint nor PhotoGrade output-enhancement technologies.

Personal Printers Up Close

Company	Phone	Product	List Price [A]	Imaging Technology	RAM (base model/ maximum)	Imaging Language
Apple Computer	408/996-1010, 800/767-2775	StyleWriter II	$289 [B]	ink-jet	NA	QuickDraw
		Personal LaserWriter 300	$689 [B]	laser	NA	QuickDraw
		Personal LaserWriter 320	$949 [B]	laser	2MB/8MB	PS Level 2
		LaserWriter Select 300	$719 [B]	laser	512K/4MB	QuickDraw
Brother International	908/356-8880, 800/276-7746	HJ-400	$369	ink-jet	NA	QuickDraw
Digital Equipment Corporation	508/777-4343, 508/493-5111	DEClaser 1152	$699	laser	2MB/4MB	PS Level 2
GCC Technologies	617/275-5800, 800/422-7777	Elite 600	$1479	laser	4MB/20MB	PhoenixPage Level 2
Hewlett-Packard	800/752-0900	DeskWriter 520	$365	ink-jet	NA	QuickDraw
		LaserJet 4ML	$1279	laser	4MB/4MB	PS Level 2
NEC	508/264-8000, 800/632-4636	SilentWriter 1097	$1399 [B]	laser	7MB/9MB	PS Level 2
		SilentWriter 640	$800 [B]	laser	3MB/3MB	PS Level 2
NewGen Systems	800/756-0556	Turbo PS/660p	$1895	laser	8MB/32MB	PS Clone Level 1
QMS	205/633-4300, 800/523-2696	QMS 420 Print System	$1195	laser	6MB/10MB	PS Clone Level 2
Texas Instruments	800/848-3927	microWriter PS23	$799	laser	2MB/4MB	PS Level 1
		microWriter PS65	$1099	laser	2MB/4.5MB	PS Level 1
		microLaser Pro 600	$1599	laser	6MB/22MB	PS Level 2

Technical-support ratings are based on a series of calls made to each company by Macworld staffers (posing as customers) to gauge the accessibility, helpfulness, and accuracy of the company's panies whose products Macworld Lab tests. E = Ethernet; L = LocalTalk; NA = not applicable; P = parallel; S = serial; SCSI = small computer system interface; T = Token-Ring.

PostScript Lasers: Under $1000

If you had told me ten years ago that 1994 would see PostScript printers selling for three figures, I'd have said you were dreaming. But it's true: this year's roundup includes several printers with list prices of less than $1000 that sell for less than $700 on the street.

The low-cost laser leader is Digital Equipment Corporation's $699 (list) DEClaser 1152. This printer provides built-in PostScript Level 2 as well as connection ports that can accommodate Macs and DOS PCs. What's the catch? For one thing, the DEClaser 1152 holds only 70 sheets of paper; its competitors hold 100 to 250 sheets. (A 250-sheet feeder is a $128 option.) The printer provides just 17 built-in fonts, compared with the 35 that many PostScript printers provide. (DEC sells a font upgrade kit with 26 additional fonts for $249.) And it's slow. The DEClaser 1152 turned in some of the slowest times of any PostScript printer tested. But this printer does deliver PostScript Level 2 and laser quality, so it's worth considering—if you're patient.

Also in the slow-but-cheap category is Texas Instruments' microWriter, whose retail price starts at $799 for a 23-font version. We tested the $1099 microWriter PS65, which provides a whopping 65 fonts—the largest font library of any printer tested. The microWriter includes a 250-sheet paper tray and accepts an optional ($199) second 250-sheet tray. (Two paper trays make it easy to mix stocks—for example, to print business letters using letterhead and second sheets. See my *Working Smart* column in the June 1994 *Macworld* for more details.)

The DEClaser 1152 and TI microWriter were really sluggish in our PageMaker and font-document tests—not surprising, considering that these tests tax a printer's controller, the portion of a PostScript printer that translates printing commands from the Mac into dots on the page. Both slowpokes use 68000-family processors, while most faster PostScript printers use RISC processors.

In the under-$1000 class, there is only one RISC-based PostScript printer: Apple's $949 Personal LaserWriter 320. The RISC paid off: the Personal LaserWriter 320 was the second fastest printer tested, finishing behind only Hewlett-Packard's costlier LaserJet 4ML.

The Personal LaserWriter 320's appeal goes beyond the stopwatch. Unlike TI's microWriter, the 320 lacks a parallel port (commonly used to connect to DOS PCs) and doesn't accept a second paper tray or a 65-font upgrade, but it's superior in every other way. It provides PostScript Level 2; the microWriter uses Level 1. (For background on Level 2, see "Inside PostScript Level 2," *Macworld*, July 1994.) The Personal LaserWriter 320 provides FinePrint output-enhancement for text, and with a $345 printer memory upgrade, supports PhotoGrade to deliver gorgeous grayscale output. The microWriter lacks resolution enhancement of any kind.

We tested another under-$1000 PostScript printer—NEC's SilentWriter 640, which sells for approximately $800. This Level 2 machine finished in between



DeskWriter 520

Getting the Best Text Ink-jet printer output, such as that of the Hewlett-Packard DeskWriter 520 (left), shows a slightly fuzzy quality caused by ink droplets spreading as they absorb into the paper. (Although the effect cannot be shown effectively on a magazine page, ink-jet blacks are generally less dark than those from laser output.) Though sharper than output from the ink-jet printer, output from Digital Equipment Corporation's DEClaser 1152 suffers from jaggies, while output from Texas Instruments' microLaser Pro shows the smooth curves that only 600-dpi machines can provide. (The original characters were enlarged 4X to accentuate each printer's problems. The smaller character shows that any of the three would work well for most business documents.)

Number of Fonts	Standard Ports/ Optional Ports/ All Active	Text Enhancement/ Gray-Scale Enhancement	Resolution (in dpi)/ Pages per Minute	Paper Sizes/ Paper Capacity (in sheets)	Energy Star–Compliant	Tested by Macworld Lab	Technical Support
39	S/none/NA	no/yes	360/2	A4, en, lgl, ltr/100	yes	yes	unacceptable
39	S/none/NA	no/yes	300/4	A4, en, ex, lgl, ltr/100	yes	no	
39	L/none/NA	yes/optional	300/4	A4, en, ex, lgl, ltr/100	yes	yes	
39	S/none/NA	yes/yes	300/5	A4, B5, en, ex, ltr/250	yes	yes	
18	P, S/none/yes	no/no	360/1	A4, en, lgl, ltr/100	yes	yes	very good
17 (43 optional)	L, P, S/E/yes	no/yes	300/4	A4, en, ex, lgl, ltr/70	no	yes	not rated [C]
35	L, P, S/E/yes	no/no	600/10	A4, B5, lgl, ltr/800	yes	no	not rated
35	L, S/none/yes	yes/yes	600 X 300/3	A4, en, ex, lgl, ltr/100	yes	yes	very good
35	L, P/E, T/yes	yes/no	300/4	A4, ex, lgl, ltr/100	yes	yes	
35	L, P, S/E, T/yes	yes/yes	600 or 300/10	en, lgl, ltr/250	no	yes	very good
17	L/none/NA	yes/no	300 or 600/6	lgl, ltr/200	yes	yes	
35	L, P, S/E/yes	yes/no	300 or 600/4	A4, lgl, ltr/70	no	yes	acceptable
39	L, P, S/none/yes	yes/no	600/4	A4, B5, ex, lgl, ltr/70	no	yes	excellent
23	L, P/S/no	no/no	300/5	A4, A5, B5, en, ex, lgl, ltr/250	yes	no	poor
65	L, P/S/no	no/no	300/5	A4, A5, B5, en, ex, lgl, ltr/250	yes	yes	
23	L, P/E, S, SCSI/yes	no/no	600/8	A4, en, lgl, ltr/500	yes	yes	

support technicians. Macworld uses a point system, including bonuses and demerits, to derive the final rating. Ratings are for companies, not individual products, and we call only those com-

[A] All units have street prices under $1400, based on vendor reports. [B] Estimated street price; vendor does not use list prices. [C] Vendor charges for tech support.

the tortoises and the hares in our tests. It provides output enhancement for text but not for graphics. Its toner-cartridge loading scheme is a bit more awkward than that of the Apple and TI printers, and its manual-feed slot was downright difficult to use. Its text quality is good, and NEC's tech support was very good in our tests, but if you can swing the extra $100 or so, get the Apple Personal LaserWriter 320.

Upper-Class Lasers

In the $1000 to $1400 range, you start to see the kinds of features that are common among pricier workgroup printers: multiple ports and emulation modes that provide better Mac-and-PC sharing; faster engines that print 8 ppm or even 10 ppm; 600-dpi resolutions that yield near-typeset-quality text; and even PostScript fax boards that let a printer send and receive faxes. These are personal power printers, ideal for publishers who work at home or for small businesses that need a full-featured printer and can afford to spend more than can a student or home user.

Apple has no offerings in this price range; its LaserWriter Select 360 sells for more than our $1400 cutoff point. It is a knockout, though, providing 600-dpi resolution, 10-ppm and RISC controller performance, and a PostScript fax option. If it were a bit cheaper, the Select 360 would have walked away with top honors. It's a winner well worth considering.

Just over the $1000 mark is the $1195 QMS 420 Print System. This printer is the poster child for the Good News, Bad News Society. The good news: 600-dpi resolution and a sophisticated controller architecture that lets you fine-tune the way the printer's memory is used. The bad news: it holds just 70 sheets (a 250-sheet tray is optional), and it's slow—far slower than the other 600-dpi machines tested. A 600-dpi printer demands a RISC processor, but the 420 has a 68020.

In a similar price range but at the other end of the performance spectrum is Hewlett-Packard's $1279 LaserJet 4ML, one of the fastest machines tested. The LaserJet 4ML uses the same 300-dpi Canon engine as Apple's Personal LaserWriter 320. The 4ML provides output enhancement for text but not for graphics. A RISC-based controller provides not only PostScript Level 2 but also HP's Printer Control Language (PCL), making this a better printer than the Personal LaserWriter 320 for Mac-and-PC users.

Moving up, we find the TI microLaser Pro 600, which retails for $1599 but can be found for about $1330. This printer marries a RISC controller to an 8-ppm, 600-dpi engine containing two 250-sheet trays as standard equipment. The microLaser Pro 600 delivered the best overall performance of any printer tested. (For speed addicts, TI sells a $349 option, called PowerStep, that doubles the speed of the RISC chip, thereby boosting performance even more.) Options include a high-speed Ethernet network interface (ideal for printing scanned images, which tend to bog down a LocalTalk network) and a SCSI interface to which you can connect a hard drive to store fonts and improve performance. All this fits in a

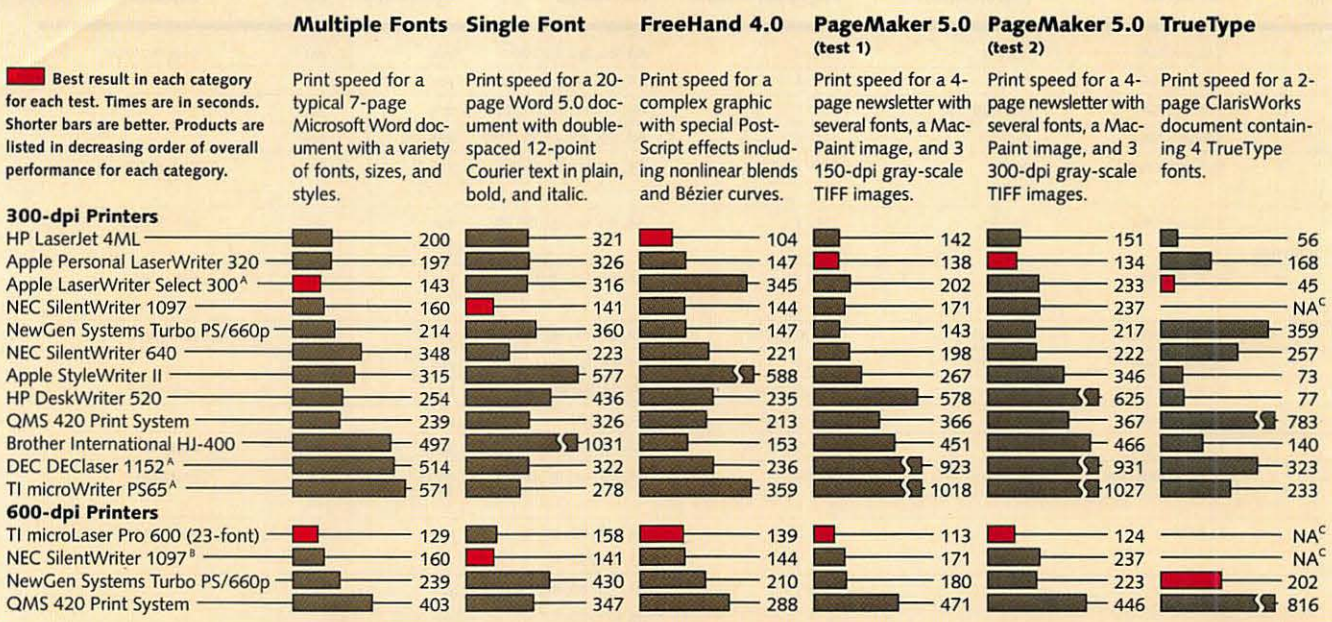


DEClaser 1152



microLaser Pro

MW LAB Personal Workgroup Printer Performance



Macworld Lab testing supervised by Danny Lee and Lauren Black

[A]Does not offer resolution enhancement; tested in standard configuration. All other 300-dpi printers were tested with resolution-enhancement on.
[B]Resolution enhancement required at 600-dpi. Other 600-dpi printers were tested at standard resolution.
[C]Could not print.

compact package that sips less than 18 watts of juice in its idle mode.

A close competitor to the microLaser Pro is NEC's $1399 SilentWriter 1097, which provides a 600-dpi, 10-ppm engine and also accepts a PostScript fax option. The SilentWriter 1097 is slower than the microLaser Pro and provides just one paper tray, but it outperformed almost every other printer in our tests.

The SilentWriter 1097 has a bizarre bug that causes it to print a black stripe along one edge of every page when you've disabled the printer's start-up page. (PostScript printers can print an optional start-up page listing status information.) Another problem: in its 600-dpi mode, the printer wouldn't print a document containing Microsoft's Minstrel TrueType font in sizes larger than 36-point. (TI's printers suffered from the same problem, which TI attributed to insufficient printer memory.) The 1097 did print the font in 300-dpi mode, but it took twice as long as did the sluggish DEClaser 1152.

The Last Word

So which printer should grace your home office? Among ink-jets, the Apple StyleWriter II is priced right and provides great print quality, but Apple's technical support was unacceptable in our tests. (Actually, it was nonexistent: we were kept on hold for more than 45 minutes, after which we gave up, on three separate tries.) Therefore, HP's DeskWriter 520 gets the ribbon. Not only was HP's tech support better, but also the DeskWriter 520 provides better networking features, superior envelope-handling capabilities, and slightly sharper text at small sizes.

In the low-cost laser league, Apple's Personal LaserWriter 320 is a superb machine, providing just the right mix of features and performance for this segment of the market. Its FinePrint technology delivers beautiful text; add the $345 6MB memory upgrade, and you get PhotoGrade-enhanced gray-scale output. Again, Apple struck out on technical support, so we can't in good faith anoint the 320 with the Editors' Choice. But the 320 is clearly superior to its competitors, so if you can live without adequate support, don't hesitate. Otherwise, consider the NEC SilentWriter 640; it's considerably slower than the Personal LaserWriter 320 and its print quality is inferior, but NEC's technical support was very good.

Among upper-class personal lasers, it's hard to argue with TI's microLaser Pro: 600-dpi output, a fast controller, and great paper-handling features make this a versatile machine you won't outgrow. Despite a poor technical-support rating, the TI microLaser Pro 600 is still by far the best we tested. Other high-end machines worth considering include NEC's SilentWriter 1097 (which accepts a PostScript fax board) and HP's LaserJet 4ML. And don't forget about Apple's LaserWriter Select 360, which is often discounted to around $1500 and also accepts a fax board. **m**

Contributing editor JIM HEID has worked with and reviewed hundreds of printers over the past ten years. He is the author and producer of *Macworld Complete Mac Handbook Plus Interactive CD*, third edition (1994, IDG Books Worldwide).

PERSONAL PRINTERS

MW EDITORS' CHOICE Unacceptable tech support removed two excellent Apple printers from contention, but the two units below are worthy replacements.

Ink-Jet

DeskWriter 520 The latest in the noble DeskWriter line has excellent print quality and better networking and envelope-handling than Apple's StyleWriter II. **Company:** Hewlett-Packard. **List price:** $365.

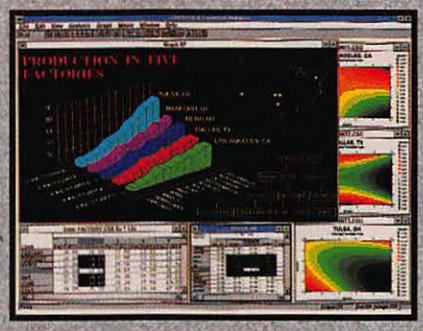
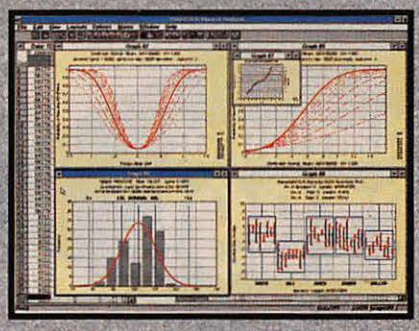
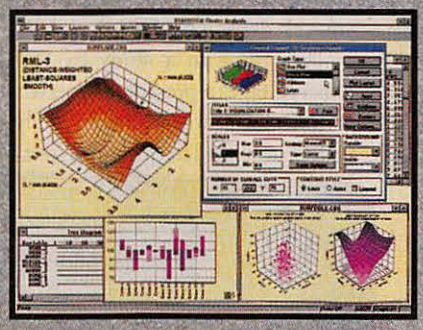
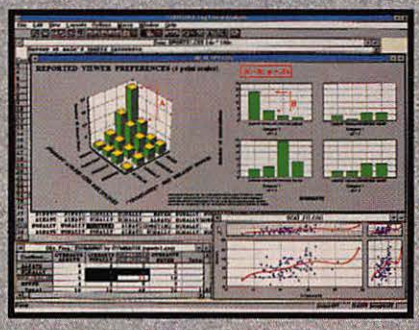
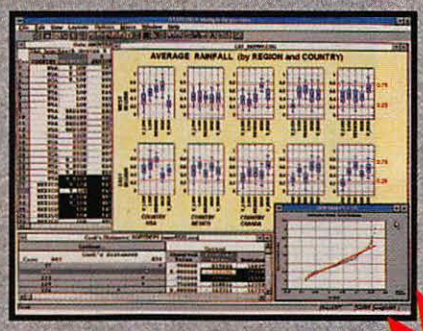
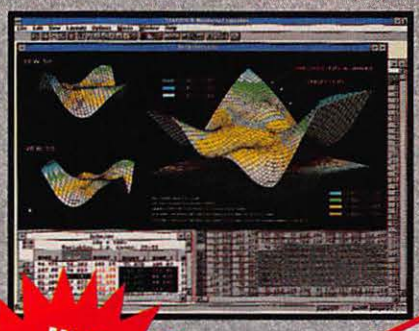
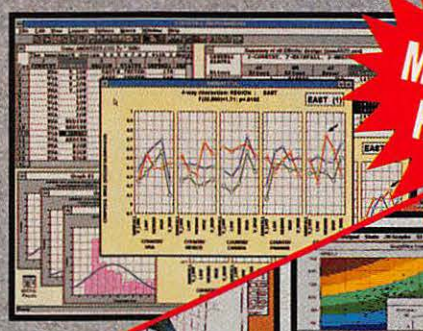
Lasers: $1000 to $1600

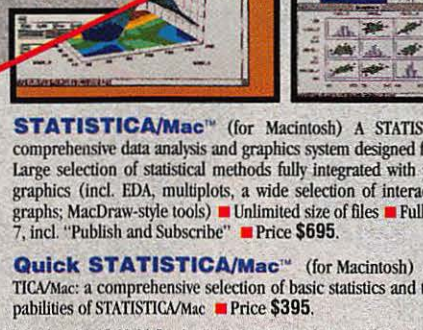
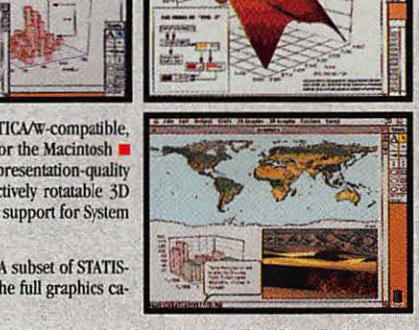
microLaser Pro 600 This petite printer packs a lot of power for the price: 500-sheet paper capacity, 600-dpi resolution, an 8-ppm engine, and a fast RISC controller. Note, however, that TI's technical support was poor in our tests. **Company:** Texas Instruments. **List price:** $1599.

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PC MAGAZINE UK EDITORS' CHOICE

"The clear winner in price performance...it's unbeatable..."

August 1993
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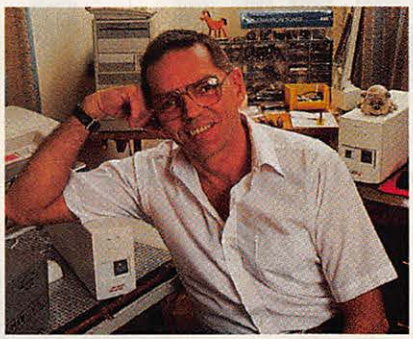


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Back-UPS® prevail



"All other brands of UPS die regularly in this lightning prone environment. My APC won't die!" said Paul Sisilli, Systems Analyst, City of Port St. Lucie . "With other brands, users don't find out until it is too late. The power interruptions here are very hard to live with. The other brands are dying off. Typically they last just beyond their warranty period. My Back-UPS is going on three years...no other brand is as reliable."



Don Traux knows first hand about Back-UPS reliability: "It ought to be against the law to buy a computer without an APC Back-UPS 250. I recently had a direct lightning hit right outside the house...my computer never blinked. Each morning I get a surge down the line and both APC's hate it - they simultaneously 'holler 'n clamp' while my 'Brand T' quietly sleeps in. I've relegated that unit to non-critical household stuff like my VCR."



Andrew Wargo, Manager at Baxter Land Company, tried two other brands before Back-UPS. "One lasted a few days, a second one went up in smoke after 48 hours, a third lasted less than 24 hours! I then bought my Back-UPS for less than half of what I had paid for the others. We've purchased three more Back-UPS and for the past 14 months they've been just hummin' away on the same power line that was eating the other brands alive!"

virtually all separate surge suppressors. Surge performance is even backed by a $25,000 Lifetime Equipment Protection Guarantee.

If you're protecting a network server, a communications interface port (on models Back-UPS 400 and higher) provides the security of an automatic shutdown to all major OS including NetWare, Windows, Windows NT, LAN Server, LAN Manager, LANtastic, SCO Unix, OS/2, Banyan Vines, AppleShare/System7 and more, so your data is safe whether the system is attended or not. (PowerChute software and interface kits sold separately.)

MADE IN

And since data processed on networked clients needs protection too, the $139 Back-UPS 250 provides an economical solution for all your LAN workstations.



Back-UPS (R to L)	Application	Sugg. List
250	LAN nodes, internet hardware, POS	$139
400	Desktop 486, 386 systems, servers	$229
450	Tower 486, 386 systems, servers	$279
600	Heavily configured systems, CAD/CAM workstations	$399
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More than... 1,000,000 Satisfied Users

APC has won more awards for performance and reliability than all other UPS vendors combined...including four consecutive LAN Times *Readers Choice awards...*

PC World Top 20 Upgrade

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LAN TIMES READERS CHOICE 1990

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Discovering how essential Back-UPS protection is can be hard...if you wait for the next storm to roll through. But discovering how afforable it has become is easy...

Call today and find out (the easy way) why more than 1,000,000 satisfied users bank on Back-UPS from APC. With more awards than all other brands combined, field-proven reliability, and a two year warranty, Back-UPS are power protection you can purchase with confidence.

Microsoft Windows Compatible · yes NetWare Tested and Approved · Artisoft Compatible LANtastic · SCO OK · Available and Ready for LAN Server · Microsoft LAN Manager Version 2.1 Compatible · Solaris Compatible

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*Unmatched lightning (tested to UL1449) and **surge protection** for maximum hardware safety*

*Network-grade **line conditioning** and **EMI/RFI filters** prevent glitches*

***LAN Interface** (on Back-UPS 400 and up) provides automatic shutdown to all major OS: Windows, NT, NetWare, LAN Server, LAN Manager, LANtastic, Unix, OS/2, Vines, AppleShare/System7 and more.*

***Site diagnostics** automatically spot missing ground and reversed polarity, two common miswirings which usually require an electrician's visit to diagnose.*

***Option switches** allow you to customize transfer voltage and alarm settings.*

***Test Switch** for ongoing peace of mind*

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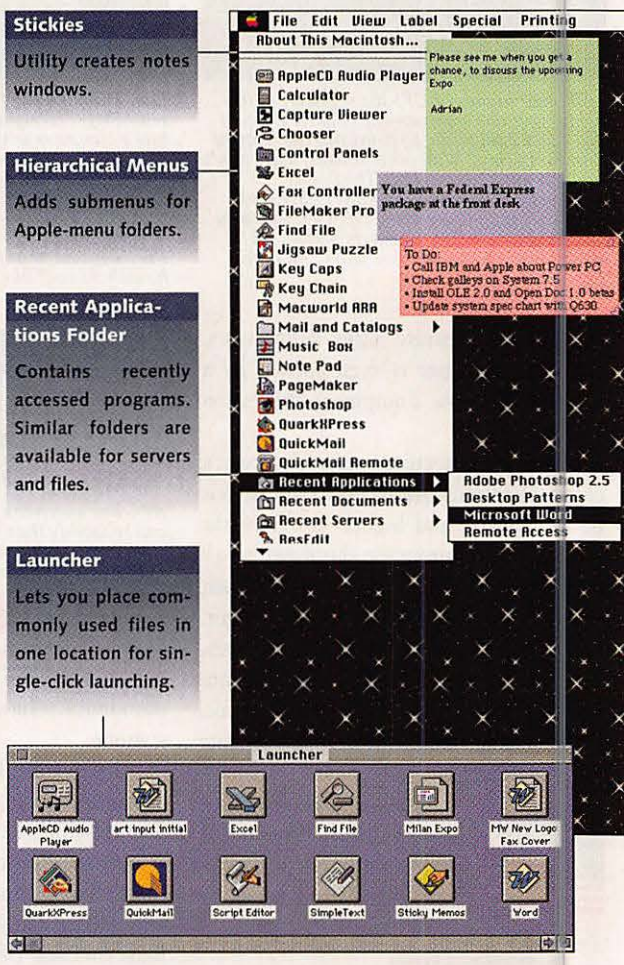
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Dept. D7

Circle 72 on reader service card

System 7.5

Improved printing and new online help highlight Apple's latest system upgrade



by Lon Poole

After leaving System 7's core features virtually unchanged for three years, Apple has finally spruced up its Macintosh system software. A new version, System 7.5, is slated for delivery in September. The new version makes good on Apple's four-year-old promise of simplified printing, and finally delivers major upgrades to typography, graphics primitives, and color matching that have been in the works for years. Yet most of these advanced features will lie dormant until developers revise applications to take advantage of them, and several important developers have indicated reluctance to do so.

The major new technology in System 7.5 is QuickDraw GX, the long-awaited successor to the QuickDraw graphics and printing component of the Mac system. QuickDraw GX gives you new printing options right away, as well as the potential for color matching, more flexible printing, typefaces with 65,000 characters, extensive ligature and fraction substitution—and more, when developers revise applications. (See "A Quick Look at QuickDraw GX," *Graphics* news, in this issue.)

You have to pull down the Help menu to see another significant addition, called Apple Guide. This new type of help system leads you through tasks step-by-step, with written instructions and graphical cues.

System 7.5 also incorporates PowerTalk and AppleScript from System 7 Pro, as well as a host of lesser improvements, many of which have been available for years as commercial and shareware utilities. PowerTalk-collaboration services include E-mail, catalogs of people and network devices you work with, simplified connection to file servers, and digital signatures. AppleScript lets you record and edit scripts to automate tasks in the Finder and other applications. (Finder scripting is new in System 7.5.)

You can install System 7.5 on a Power Mac (most of the new features are written in native PowerPC code) or a Mac with a 680X0 CPU. Apple will install 7.5 on all new Macs, and will sell upgrade kits through software resellers at prices no higher than what System 7 Pro now costs ($149 retail for one user). A new

Legend: Basic System 7.5 | QuickDraw GX | PowerTalk

Drag-and-Drop Editing

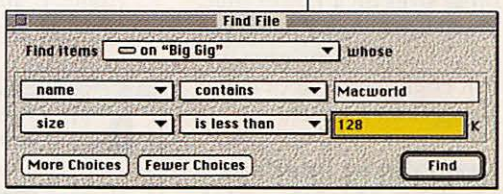
Drag selected text or graphics from one compatible application into another.

Desktop Patterns

New control panel comes with several dozen patterns.

Find File

Searches by multiple criteria and displays a list of all found items.



Note Pad

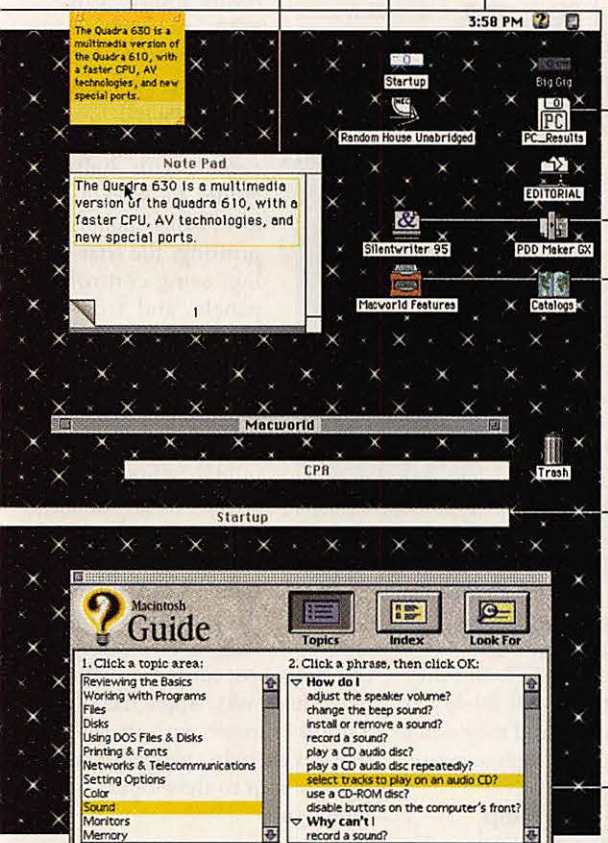
Now resizable, printable, and searchable, and each page can hold 32K.

Clock

Displays time or date.

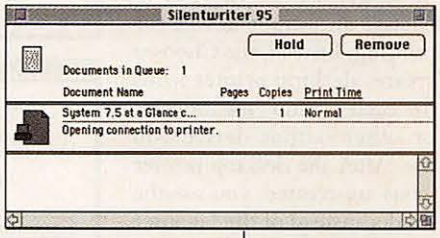
PC Exchange

Mounts PC floppy, removable, and hard disks.



Printer Icons

These let you drag-and-drop files for printing and access print managers.



PowerTalk Services

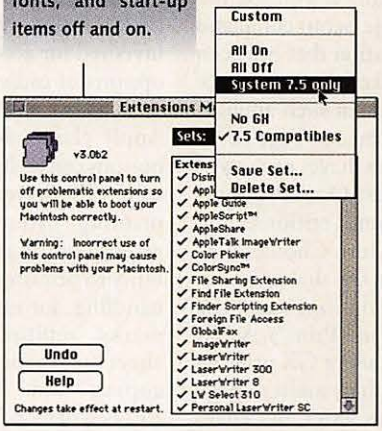
Send and receive E-mail, catalog users and servers, and expedite server log-on.

Print Managers

Display status of a printer's current jobs and let you manage the print jobs or move them to other printers. (They replace PrintMonitor.)

Extensions Manager

New control panel lets you turn control panels, extensions, Apple menu items, fonts, and start-up items off and on.



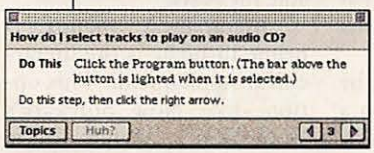
Roll-up Windows

Reduce a window by double-clicking its title bar, which leaves the bar visible for access later. Double-click the title bar to redisplay the window.

Apple Guide

Offers online help and on-screen animated pointers for programs with Apple Guide help files.







ATM GX

Bundled version of Adobe Type Manager handles new features of GX Type 1 fonts, which allow on-the-fly font alterations and ligature creation.



SimpleText

This TeachText replacement handles portable documents, spooled print jobs, sound, QuickTime, and other multimedia formats, plus text.



Easy-Access Folders

This Performa feature creates special folders for Documents and Applications.



ColorSync

Lets you maintain color consistency across supported scanners, monitors, and printers.

installer program makes it easy to install just the System 7.5 core features first and add the advanced features later.

Apple recommends that a 680X0 Mac have 4MB of RAM for the core features and 8MB for everything; double those sizes on a Power Mac. You'll need more RAM if you plan to install many extra system extensions or keep multiple applications open.

New Printing Interface

Installing QuickDraw GX changes how you print. You no longer use the Chooser to choose an output device for printing. Instead, the Chooser creates desktop printer icons for each printer, fax modem, or other output device you use. After the desktop printer icons are created, you use the Finder instead of the Chooser to choose a printer by selecting the printer's icon and choosing Make Default Printer from the Finder's new Printing menu. You can use the Finder's Sharing command to share, and optionally password-protect, any directly connected or network printer that has a desktop icon.

You can also choose a printer whenever you use the Print or Page Setup command in an application that has been revised to take full advantage of GX printing. In such applications, the Print and Page Setup dialog boxes have new two-level designs. One level presents minimal options, and clicking a More Choices button enlarges the dialog box to show more options (see "GX Page Setup and Print"). Applications that adopt GX printing can also combine multiple page sizes, such as letter and envelope, in a single document. Of the developers *Macworld* surveyed, Microsoft, WordPerfect, and Manhattan Graphics said some or all of their applications would soon have the GX printing dialog boxes; Deneba Systems plans to add these dialog boxes but isn't sure when; and Adobe, Aldus, and Quark have decided to forgo these dialog boxes, at least for now. Claris had no comment.

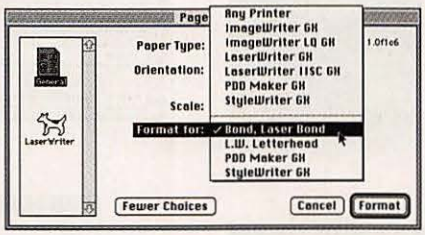
Whether or not applications adopt GX printing, existing printer drivers don't even show up in the Chooser when QuickDraw GX is installed. Apple has a utility that lets you use non-GX drivers with any program.

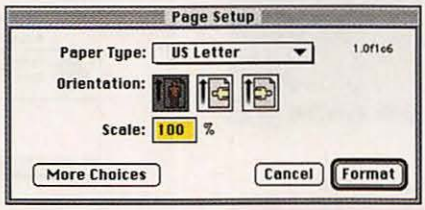
Apple is providing new GX drivers for its printers, including a LaserWriter GX driver that Apple claims will work with most PostScript output devices. Hewlett-Packard says it'll have some GX drivers available soon after System 7.5 ships.

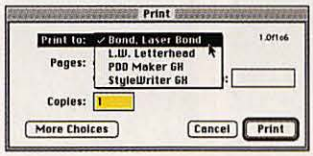
The LaserWriter GX driver does not work with PostScript printer description (PPD) files, which Adobe invented for accessing specific options of individual printers such as multiple input trays. Apple claims device-specific options can be handled by custom GX drivers or by GX printing extensions. These extensions can add more flexibility to printing than PPDs—handling, for example, watermarks, multiple pages per sheet of paper, two-sided copies, and booklets—but PPDs work on Windows and Unix computers, while GX extensions work only on Macs.

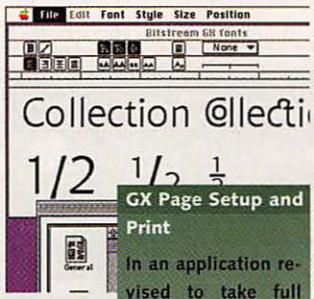
One of Apple's GX drivers creates portable digital documents (PDDs). The advantage of PDDs is that anyone who has QuickDraw GX installed can view and print PDDs at any resolution without the applications and fonts used to create the PDDs. A PDD can include the fonts used in it, and anyone can view and print a PDD with SimpleText, the TeachText replacement included with System 7.5.

SimpleText does not permit copying, pasting, or searching text in PDDs. Apple says this kind of PDD manipulation is possible and sees it as an opportunity for enterprising developers. Other portable document makers, such as No Hands Software's Common Ground, Adobe's Acrobat, and Farallon's Replica, already let viewers manipulate their portable documents. Moreover, those products work on Windows computers and on Macs without QuickDraw GX. But they can't print with full fidelity at any resolution, and they don't come with the system software.









GX Page Setup and Print

In an application revised to take full advantage of QuickDraw GX printing, the Page Setup (left) and Print (right) dialog boxes have two modes: simplified and full. In either mode, you can choose a printer from the pop-up menu, which lists all printers with desktop icons.

Step-by-Step Help

If you never use System 7's balloon help, you're not alone. You'll be much more likely to use the step-by-step help called Apple Guide in System 7.5. It actually shows and tells you how to get things done. Choosing it from the Help menu brings up a window that floats above all other windows in the active application.

You get help on a task by choosing a topic and then a subtopic from organized lists, browsing an index, or having Apple Guide search for a term. You move to the next or previous step in the task by clicking buttons in the Apple Guide window. At each step, the guide coaches you by marking an object on screen with a circle, arrow, or underline. All these coaching marks look neatly hand-drawn, and on a color screen they appear in an attention-getting color.

Apple Guide can adjust itself if you work ahead or if you make a mistake. If you make a mistake, it will show you what you should have done, and then continue. Apple guides can even perform a step for you (for example, opening a control panel).

System 7.5 comes with help guides for system-level tasks such as printing, file sharing, using control panels, and troubleshooting. Developers and system administrators can create additional help guides, which can cover tasks that involve multiple applications. Apple Guide's usefulness depends greatly on how well-crafted the help procedures are for individual tasks. Apple has set a good example with its system-level help procedures. Now it's up to developers to follow suit.

Borrowed Enhancements

Besides original work like Apple Guide, System 7.5 includes many enhancements to the interface based on utility software that has been available for years.

Hierarchical menus A prime instance is the hierarchical Apple menu. This option—like Now Software's WYSIWYG Menus, Kiwi Software's Power Menus, and other utilities—displays a submenu when you highlight a folder in the Apple menu. The

submenu lists the contents of the highlighted folder. System 7.5's Apple menu can automatically display submenus listing the documents, applications, and servers you used most recently.

Collapsible windows Another System 7.5 option lets you collapse a window into its title bar. The effect is like rolling up a window shade, and the option works with all windows and palettes (not just Finder windows).

Stickies Everyone knows someone whose clutter bristles beyond the screen in the form of sticky notes. With System 7.5, you can suck that clutter onto the screen. You can set the text style in Stickies, but you cannot paste a graphic, movie, or sound into them. Stickies do not float on top of the active application's windows.

Performa interface Apple borrowed more interface enhancements from its own Performa version of System 7. These options include the ability to protect your System Folder, big flashy desktop patterns, dedicated folders for applications and documents, the ability to hide the Finder automatically when you open or switch to another application so that accidentally clicking the desktop doesn't take you to the Finder, and the Launcher (a window containing aliases of frequently used items, each of which you can open with a single click).

Foreign-file compatibility Continuing the bundle started with System 7.1.2 (for Power Macs), Apple includes Macintosh Easy Open (MEO) and PC Exchange with System 7.5 (for all Macs). With MEO, the Finder no longer complains when it can't find the application that created a document you're trying to open. Instead MEO displays a list of alternate applications that may be able to translate the file. MEO remembers the substitute application you pick for a particular type of file and uses it by default the next time you open the same type of file. PC Exchange lets a Macintosh read and write floppy disks formatted on PCs. With PC Exchange, these foreign disks appear on your desktop like Mac disks.

All of these interface enhancements—not to mention the clock in the menu bar—are optional. You turn them on and off using control panels. And they all work with the software you have now.

Beyond Pro

Apple decided not to do a separate Pro version of System 7.5, instead rolling all of the former Pro features into the standard system software.

Scripting One former Pro feature is AppleScript, which allows systemwide scripting. This is the first version of the system software that includes a scriptable Finder, so you can automate tasks such as adding an alias to the Apple menu, finding an alias's original item, changing the number of displayed colors, and setting up a shared drop folder. A folder full of ready-made scripts does these and other useful things, and you can record and edit your own scripts with the included Script Editor program.

Collaboration services PowerTalk collaboration services are also inherited from System 7 Pro. With PowerTalk you can exchange E-mail with other network users, and you can catalog individual people, groups, file servers, and things you work with.

You can apply a digital signature to any document, and anyone with PowerTalk can verify who signed the document and can confirm that no one has changed it since it was signed.

Drag-and-drop editing In addition to the former Pro features, System 7.5 includes an improved version of a formerly independent system extension for drag-and-drop editing between applications. In applications that take advantage of this extension—such as SimpleText, the new resizable Scrapbook, Stickies, and the improved Note Pad—you can drag a copy of selected text or graphics from one document window to another.

Bundled extensions System 7.5 includes several pieces of system software that had been distributed other ways.

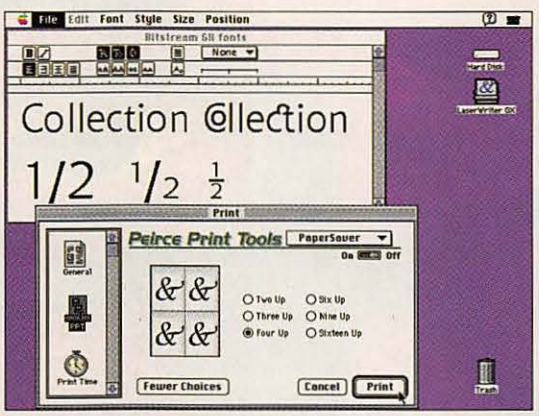
One of these is the asynchronous SCSI Manager like the one in the ROMs of the Quadra 660AV and 840AV, and the Power Macs. Now that SCSI Manager 4.3 comes in System 7.5, all Quadras and Centrises can keep multiple SCSI devices busy simultaneously—for example, by reading from one device while writing to another. To realize the asynchronous SCSI Manager's full potential, you may need to upgrade the driver software for your hard drives and other SCSI devices.

MacTCP is also included for access to Unix networks and the Internet.

Fix-Its Other refinements speed up menus, program launching, application switching, and file copying in the Finder and let you use storage devices that hold up to 4GB. The System file includes System Update 3.0, which fixes several bugs and makes minor enhancements. The hodgepodge of system-enabler files has been consolidated into one file. That should end the hassle of keeping different emergency disks for each Macintosh model.

New Print Capabilities

Programs supporting the new PostScript and TrueType GX font formats can automatically build special characters such as ligatures, fractions, and swashes (top). A new type of printer drivers (called printer extensions) provide interactive customization of output, such as thumbnail generation and watermarking.



The Last Word

System 7.5 offers many components, but it may be that neither you nor your applications will benefit from them. Several developers plan to ship applications that incorporate some new features of System 7.5, but *Macworld*'s survey of major developers failed to turn up one product that has them all. One reason is that many developers of applications with both Mac and Windows versions are reluctant to implement GX's advanced typography and graphics because Windows has no equivalent technology.

That's OK, because System 7.5 is worthwhile even if you don't use all of it, and you can install its three components separately. Unless your Mac has less than 4MB of RAM, you'll benefit from installing the core component.

The rest of System 7.5 is gravy. Install PowerTalk when you want collaboration services, and wait to install QuickDraw GX until you have the RAM for it, you have the drivers for GX printing, and your applications can make use of it. System 7.5 is no must-have right now, but its solid interface enhancements make it a decent value, and its whizbang technology gives it great promise. **m**

Contributing editor LON POOLE is the author of *Macworld System 7.5 Bible* (IDG Books Worldwide, 1994).

You got a Mac. And then a few more. You tied them together. People started sharing. Everything.



Now they're sharing their frustration. With you.

Time for a Workgroup Server.

Funny thing about the Macintosh® computer. With little fanfare and an idea known simply as "plug and play," it turned a whole lot of novice users into networkers.

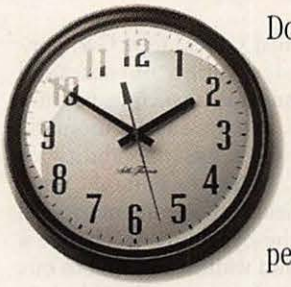


And is it any surprise? All you have to do is plug a connector into your Macintosh, and you're networked. You can share printers. You can share modems. You can even share files with your peers.

This kind of "peer-to-peer" network is all some workgroups need.

Others, however, soon find they're ready to take the next step: a Workgroup Server dedicated to improving the ebb and flow of vital information.

How do you know if you're ready? Just ask yourself a few simple questions.



Do I have more than five computers tied together in a peer-to-peer network? Is one printer always backlogged while others sit idle? When people share files, are their systems slowing down? Is there confusion about who has the latest data and where it resides?

If you answered yes to any of these questions, it's definitely time to consider a Workgroup Server from Apple.

Workgroup Servers provide a centralized place for users to store and share files. Which means your shared files don't get lost, your systems don't slow down and users always have access to the latest information.

A server also gives you a place to put network applications and services—accounting programs, databases, e-mail and more—for everyone to use.

And that's just the start. With print spooling software, your users won't wait forever for your printers to print. With FileWave software, you can distribute new programs and upgrades from the server, without trekking from computer to computer. With Dantz Retrospect Remote, you can back up every system on the network—both clients and servers—automatically. While with Apple® Remote Access software, your users can access the network from anywhere.

"OK," you say, "but how difficult is it to use a Workgroup Server?" It's as easy as using a Macintosh. All you have to do is connect the components, turn on the power, and you're ready to go.

Choosing the right server for your workgroup is just as easy. We have six models for all kinds of needs, from the Workgroup Servers 60, 80 and 95 to our newest models based on the high-performance PowerPC™ chip: the Workgroup Servers 6150, 8150 and 9150.



No matter which one you choose, you're backed by our expert telephone support, 24 hours a day, seven days a week.

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For a free brochure*, simply pick up the phone and call us at 800-538-9696, ext. 430. And unlock the power of your workgroup. The power to be your best.®

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A Quick Look at QuickDraw GX



JOSEPH POPA

QUICKDRAW GX IS APPLE COMPUTER'S first significant enhancement to the Mac's System-level graphics capabilities. An optionally installable component of System 7.5 (which Apple expects to ship in September for about $150), QuickDraw GX offers a variety of features that the company hopes will be of particular interest to graphics professionals.

Printing QuickDraw GX provides a number of printing enhancements. For example, you can now drag print jobs directly onto Finder-level printer icons (see the feature "System 7.5," in this issue, for a detailed look at GX's printing interface). And you can customize and track print jobs using third-party GX printing extensions. The extensions modify a print job once the application is finished with it; thus, your application doesn't need to be GX-aware to use the printing extensions.

Peirce Print Tools, $129 from Peirce Software (408/244-6554), is expected to be the first package of GX printing extensions (it shipped in June). The package includes a logging module, which service bureaus and other users can use to track details (print time, client name, and so on) of print jobs.

Because QuickDraw GX introduces a new print architecture to the Mac, it renders your applications' current printer drivers useless. In hopes of solving the problem, Apple is shipping with GX new versions of all its printer drivers and is "actively evangelizing" printer manufacturers to develop their own GX drivers, according to Ron Fernandez, product marketing manager for QuickDraw GX. Apple's new LaserWriter GX driver works with most existing PostScript Level 1 and Level 2 printers, Fernandez added.

But the LaserWriter GX driver doesn't work with PPD (PostScript Printer Description) files. As a result, some printing controls available in PPD-dependent applications—Aldus PageMaker among them—might not be supported by initial GX printer drivers. To get around the problem, Apple has included in GX a Finder-level menu utility that will let you print using existing printer drivers on an application-by-application basis—provided that both the GX and non-GX driver are available in the System Folder.

Fonts QuickDraw GX includes a "smart" outline-font data structure. GX fonts (in both TrueType and PostScript Type 1 formats) can contain as many as 65,000 glyphs (character variations), enabling font developers to build in an array of digital typeface characteristics and instructions.

An individual QuickDraw GX typeface can include a variety of contextual character substitutions (such as ligature sets, fractions, and swashes); automatic kerning and tracking; the ability to stretch, skew, or rotate editable type; automatic optical text alignment; optical scaling; and the capability to change a font's weight and width easily and to mix text from various languages (English, Arabic, and Japanese, for example) within a single line of type.

Current applications will be able to recognize and print GX fonts, but they must be revised to take advantage of GX's font-manipulation capabilities. At press time, only a few software applications—among them Pixar's Typestry, Ares Soft-

ware's FontChameleon, and Manhattan Graphics' ReadySetGo—were expected to be made GX-aware (see "The Wait for QuickDraw GX Is Over—Sort Of," in this section).

QuickDraw GX font developers include Bitstream, Linotype-Hell, International Typeface Corporation (ITC), and Adobe Systems. The product is expected to ship with a handful of GX typefaces, among them Adobe's Tekton Plus. In addition, Apple has integrated Adobe Type Manager 3.7 into QuickDraw GX.

QuickDraw GX fonts pose a problem to font and application developers: with no QuickDraw equivalent in the Windows environment, how can the GX font format be supported in cross-platform applications? Developers such as Adobe and Aldus say the solutions aren't immediately clear.

Meanwhile Aldus, Linotype-Hell, and ITC announced the formation of the Font Consortium, whose charter is to develop a platform-independent, open font standard that builds upon QuickDraw GX's font technology.

Portable Digital Documents Whether or not your application has been revised to be QuickDraw GX–aware, you will be able to generate electronic documents in Apple's new Portable Digital Documents (PDD) format. To generate, view, and print PDDs, you must have QuickDraw GX; a PDD recipient doesn't need the application or fonts used to create the document, though.

Because users can view or print a PDD file at any resolution, Apple believes ad agencies and design firms will want to send design comps to clients as PDD files. (Recipients can't edit PDDs, however.)

Color Matching ColorSync, Apple's open-architecture color-matching technology (now in version 2.0), has been integrated into QuickDraw GX. With ColorSync a part of GX, hardware manufacturers can more easily incorporate accurate color profiles into their device drivers, enabling GX to automatically match screen, input, and output colors on an operating-system level.

Upgrading Even Apple concedes there are factors to consider before installing QuickDraw GX. Are your regular applications scheduled for an update to take advantage of GX's features? Also, are you sure your system has enough RAM? (QuickDraw GX and System 7.5 combined require 8MB of memory for 680X0 Macintoshes, and 16MB for Power Macs.) Most important, will you be able to print from your current applications under GX? Apple Computer, 408/996-1010.—J.A.M.

Kodak's Latest Digital Camera

EASTMAN KODAK HAS ANNOUNCED the Kodak Professional DCS 420, a digital camera similar to the DCS 200 model it replaces except for enhancements such as improved image capture, storage, and battery power. (For more on the DCS 200, see "Photography without Film," in this issue.)

The DCS 420 captures images at 12 bits per RGB color and automatically resamples them to 24 bits for improved color depth; Eastman Kodak says a future software upgrade will offer full 36-bit transfer. Unlike the DCS 200, which stores up to 50 photos on an internal hard drive, the DCS 420 stores 65 to 70 photos on a 105MB Type III PCMCIA card. And for annotating photo shoots, the new camera can record audio clips onto the PCMCIA card.

The DCS 420 uses one rechargeable nickel–metal-hydride battery pack promising at least 1000 exposures per charge—about ten times more battery life than the DCS 200's capacity. The DCS 420's list price of $10,995 includes a Nikon N90 camera as well as the DCS 420 digital camera back. Eastman Kodak, 716/724-4000.—J.A.M.



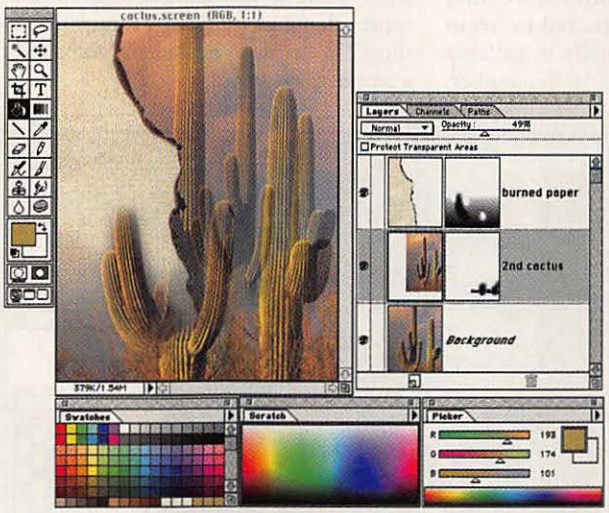
KEVIN CANDLAND

The Kodak DCS 420 uses PCMCIA cards for storing images and lets you take five shots in 2.25 seconds.

Photoshop's Layered Look

THE FIRST FULLY NATIVE PowerPC version of Adobe Photoshop, 3.0, will give users some eagerly anticipated features, including multiple layers, color-correction controls, drag-and-drop between documents, and floating, customizable palettes.

The most obvious improvements, the Layers palette, provides greater flexibility in manipulating and compositing images. You can turn individual layers on and off; reorder, group, and merge them with other layers; give each layer its own mask; and interactively apply any kind of effect—changing or undoing the operation if it turns out to be less than ideal.



With Photoshop 3.0's Layers palette, you can add as many as 99 layers (in addition to the background layer) to an image. Layers can be reordered, grouped, or merged; plus, each layer can have a mask attached. Floating palettes can be collapsed, expanded, consolidated with other palettes, and displayed in one or more columns. (Photo-illustration by Linda Tapscott. Cactus photo: PhotoDisc™.)

Photoshop's color-correction controls include CMYK Preview, which lets you proof output colors before conversion; Selective Color, for altering color percentages in each plate; Replace Color, to select and alter areas by color; and Gamut Warning, which highlights out-of-gamut areas that you can interactively bring back into gamut with color-adjustment tools such as the new sponge tool, which interactively saturates and desaturates colors. Color Range lets you build complex masks

continues

by selecting areas by color.

Floating palettes can be separated or combined, collapsed or expanded. You can assign a keyboard equivalent to any menu command and add the sequence to the Commands palette, where you can change the order of commands and how they display.

For filter fans, version 3.0 offers the Lighting Effects, Mezzotint, Dust & Scratches (for retouching and restoration), and Clouds filters, as well as a Filter Factory for creating your own. In addition, all filter dialog boxes now let you preview your filter efffects before actually applying them.

Minimum system requirements are a 68020 CPU with 6MB of application RAM and 20MB of disk space; Adobe recommends a 68040 or Power Macintosh with 8MB to 16MB of available RAM, 50MB on disk, and a 24-bit accelerated graphics board.

Due to ship by September, the $895 Photoshop 3.0 will include smart-install floppies for 680X0 and Power Macs, and a CD-ROM version with Adobe Acrobat Reader, third-party plug-ins, and stock images. Upgrades are $149. Adobe Systems, 415/961-4400.—CATHY ABES

The Wait for QuickDraw GX Is Over—Sort Of

FIVE YEARS AFTER SOME OF QUICKDraw GX's capabilities were first announced, Apple is expected to begin shipping it as an optionally installable component to System 7.5 in September. But for most users, the wait for some GX features is far from over.

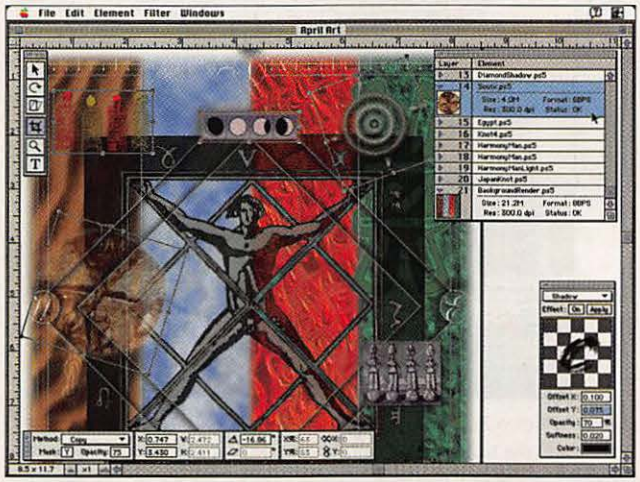
Except for QuickDraw GX's printing architecture and ability to create and display Portable Digital Documents, applications must be revised to take advantage of GX features. But at press time, only a few graphics software companies had firm plans to incorporate GX capabilities in their programs—among them Manhattan Graphics, with a GX-aware version of ReadySetGo in the works (see *Graphics* news, *Macworld*, August 1994).

There are several reasons that many developers are wary of GX. Companies such as Aldus, Adobe, Quark, and Frame Technology are concerned about cross-platform compatibility. QuickDraw is a computer environment particular to the Mac, which makes it difficult, if not impossible, to support GX-specific features on DOS, Windows, or Unix machines (see "A Quick Look at QuickDraw GX," in this section).

"QuickDraw GX offers some nice features for the Mac, but we have to think about Windows and Unix as well," said Martin Doettling, director of product marketing for Frame, which develops the document processing application FrameMaker. Some vendors don't want their programs to rely on QuickDraw for the execution of important graphics features. Quark spokesperson Peter Warren said the company has worked hard to add sophisticated graphics capabilities to QuarkXPress. "We don't want to simply hand over the control [of those features] to Apple," Warren added.

In addition, Apple's prolonged procrastination in bringing GX to market has made many developers think twice before supporting GX's features. At least one company—Corel—has discontinued development of a GX-aware graphics program largely because of Apple's tardiness.

Still, most developers say that if a significant number of users request GX features, they'll revise their applications accordingly. "With QuickDraw GX, we're going to wait and see what the customer demand is," said Frame's Doettling. "We're not," he added, "going to be a pioneer."—J.A.M.



Collage 2.0 now handles CMYK files directly and lets you work with larger images. The improved interface includes a floating Effects palette, a Pan tool, and a filter-editing list.

IN BRIEF

■ **Font Effects** Altsys's Font-o-matic utility ($59.95) offers 15 graphical type effects—from cow spots to cactus prickles—that you can apply to individual characters or entire PostScript or TrueType fonts. You can then save the applied effects as new fonts. 214/680-2060.

■ **Batching Graphics** Batch It ($199), shipping in August from Gryphon Software, is a batch processing tool for graphics files that has a palette of 30 "tiles," each performing a different operation, such as resizing or color correction. Batch It lets you link tiles together to perform multiple tasks, set key images for other images to emulate, and input set values in the tiles. 619/536-8815.

■ **Freedom Discontinued** ColorAge has discontinued sales of Freedom of Press Classic, its PostScript RIP software for ink-jet and laser printers. The company will offer technical support through December 31, 1994. ColorAge previously discontinued Freedom of Press Standard and Freedom of Press Light. 508/667-8585.

More Power to Collage

THE NATIVE POWERPC UPgrade of Specular Collage ($399), the interactive compositing tool for Adobe Photoshop images, directly supports CMYK image files and handles large images (16,000 by 16,000 pixels) for users who produce film output and poster-size images. Collage 2.0 also includes a more powerful Color Picker and lets you import monitor settings from Photoshop for accurate color matching.

You can selectively remove filters applied to elements, and temporarily remove elements from the canvas without deleting them from Collage. Other new features include a Pan tool to minimize the need for scrolling, an Effects floater that consolidates the Shadow and Feather dialog boxes, and the ability to change a document's parameters after setup. Collage 2.0 ships in August; upgrades are $49. Specular International, 413/253-3100.—CATHY ABES

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Expert Graphics

GRAPHICS PROFESSIONALS SHARE THEIR SECRETS

by Cathy Abes

Artist: Mark Jenkins is a senior designer at Rucker Huggins, a Mountain View, California–based design studio whose clients include Fractal Design, Ray Dream, and Apple Computer.

How It Was Done: This image was created for an exhibit of computer art in Vancouver, British Columbia. Jenkins began by scanning in two photos he had taken of people sleeping on a wall—one color, the other black-and-white. Because he wanted the image to look like a traditional-media painting, Jenkins did most of the work in Fractal Design Painter. After opening the scanned images in Painter, he used the Charcoal brush to flesh out the figures and the Total Oil brush to add details.

Because Jenkins didn't like the position of the bottom figure's legs and feet, and because she was partially blocked by the other sleeping figure, he created a new pair of legs for her. To do this, he scanned various halftones of figures in different positions, trying different sets of legs with the body until he found one that worked. After pasting in the new legs and feet, he painted over the feet and added the blanket using the Charcoal and Total Oil brushes until they blended in with the rest of the body.

In Photoshop, Jenkins created a separate mask for each figure, and a feathered mask with a black-to-white gradation for each ledge; then he used the Composite command (Calculations) to merge each figure mask with its corresponding ledge mask so the hard-edged figures stood out against the wall, while the ledges faded into the wall. The wall itself was a composite of fragments Jenkins took from several photos. To add numerous layers and keep the wall from looking too uniform, he used the Charcoal brush as a cloner with the Grainy Soft Cover Cloning method; this allowed him to select a paper texture for the clone to react to, making it vary from the original. The finished figures and ledges were composited with the wall in Photoshop. m





❶ Scans of the original photo of the man and the original photo of the women.



❷ The unfinished female figure with a halftone of the legs and feet that were used as a basis for painting the final legs and feet.

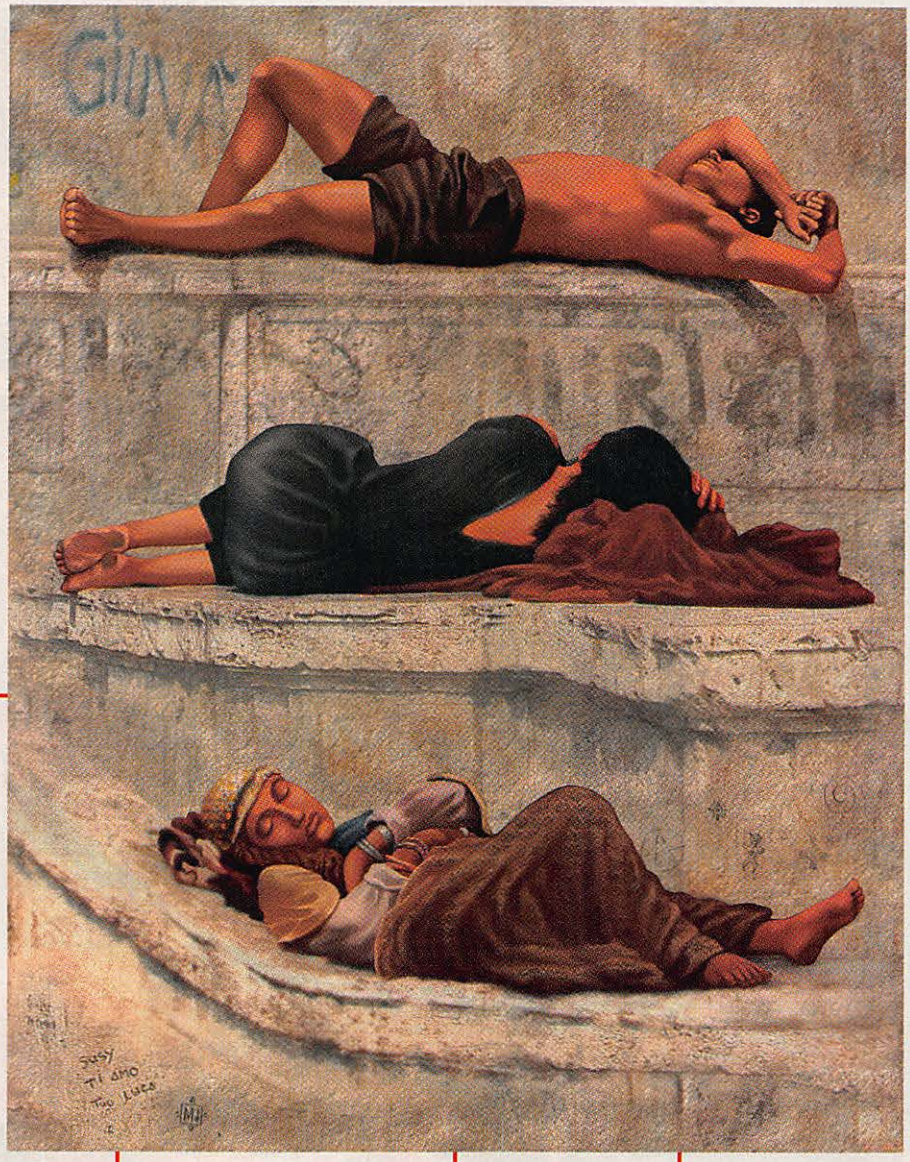


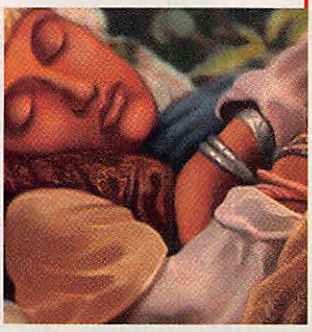
❸ In Painter's Brush palette, Jenkins customized his brush; for the Total Oil brush, he moved the Penetration (color mixing) and Concentration (color intensity) sliders. This brush simulates applying paint to a wet surface, resulting in new shades and gradations of color.

THE TOOLS

Hardware: Quadra 800 with 74MB of RAM and a 185MB internal hard drive; 1GB MicroNet external hard drive; 44MB removable SyQuest drive; 6-by-9-inch Wacom tablet; 21-inch SuperMac monitor; Hewlett-Packard IICX color scanner.

Software: Fractal Design Painter 2.0; Adobe Photoshop 2.5.1.

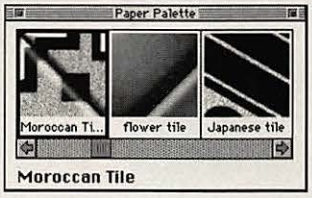






4 To give the brushstrokes a three-dimensional quality, Jenkins added luminance to the face and arms of the figure (top left), using the Image Luminance method in Painter's Apply Surface Texture window (bottom left).





5 To add depth and texture to the blanket draped over the figure's legs (top left), Jenkins applied a texture he had previously created—Moroccan Tile—from Painter's Paper Palette (bottom left).



6 In Photoshop, Jenkins used the Add command (in the Calculate submenu) to merge the two separate channels for the figure and the ledge into one mask for compositing them into the final illustration.


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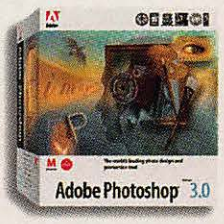
Here's the recipe. It begins with nine scanned images of restaurants, tables, chairs, a waiter, picture frames and a dinner to die for. Background layer ❶ holds master image. On another layer ❷, sections of two restaurants complete overall scene. Layer Masks are used to hide unwanted portions of image. Wine bottle shadow ❸ is extended using airbrush on Fade setting. Replace Color feature ❹ changes color of wine from red to white. Lighting Effects filter ❺ is used to reduce ambient light and add highlights that reflect multiple light sources. Color Range feature ❻ isolates waiter (originally shot against textured wall), and he is placed in the scene. Mirror images ❼ are copied to multiple layers where they are scaled, composed and further manipulated. Clouds filter ❽ creates window to outside world. Original photographs by Robert Mizono.

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Digital cameras come in a variety of sizes and configurations. Clockwise from top: Leaf Systems' Lumina; the Eastman Kodak DCS 200 (which uses a Nikon body), and the Apple QuickTake 100.

Photography without Film

MACWORLD EVALUATES DIGITAL AND STILL-VIDEO CAMERAS

These days, many photographs captured on film end up as computer images—so why shouldn't they start out that way, too?

That's the question many professional photographers, publishers, and illustrators are asking themselves, now that electronic cameras are becoming more affordable. Although electronic cameras have been around for years, Apple Computer's recently released QuickTake 100 is widely considered to be the first to offer both ease of use and good color-image quality for less than $1000.

Electronic cameras combine photographic optics with computer imaging—and do away with film expenses, caustic chemicals, and processing delays. For economy-minded amateurs and deadline-driven professionals—and for anyone who wants to include images in computer-generated documents—a filmless camera seems like a dream come true.

To find out how well electronic cameras deliver on their promises, I spent two months working with seven models (all under $10,000): Apple's QuickTake 100, Canon USA's RC-570, Dycam's Dycam Model 3, Eastman Kodak's DCS 200, Fuji Photo Film's Fujix DS-100, Logitech's FotoMan Plus (which is identical to the Dycam Model 3 except for the software that comes with it), and Sony Electronics' MVC-7000. I also tested a preproduction unit of Leaf Systems' Lumina digital camera/three-pass scanner (see "Leaf's Lumina: Something Completely Different"). At press time, Kodak announced it was replacing the DCS 200 with the DCS 420, a similar but upgraded version of the digital camera. See "Kodak's Latest Digital Camera," *Graphics* news, for more information.

For my tests, I photographed a variety of indoor and outdoor scenes to assess each camera's image quality and ease of use, and I put the image-transfer hardware and software most cameras provide through their paces. In addition, *Macworld* asked San Francisco–based professional photographer Stan Musilek to use the cameras in his studio and offer his impressions (see "Comparing Image Quality").

The verdict? There's room for improvement in both cost and image quality. For example, the most exciting new offering, the QuickTake 100 ($749), costs much more than a 35mm single-lens reflex (SLR) camera that accepts inter-

PHOTOGRAPH BY STAN MUSILEK

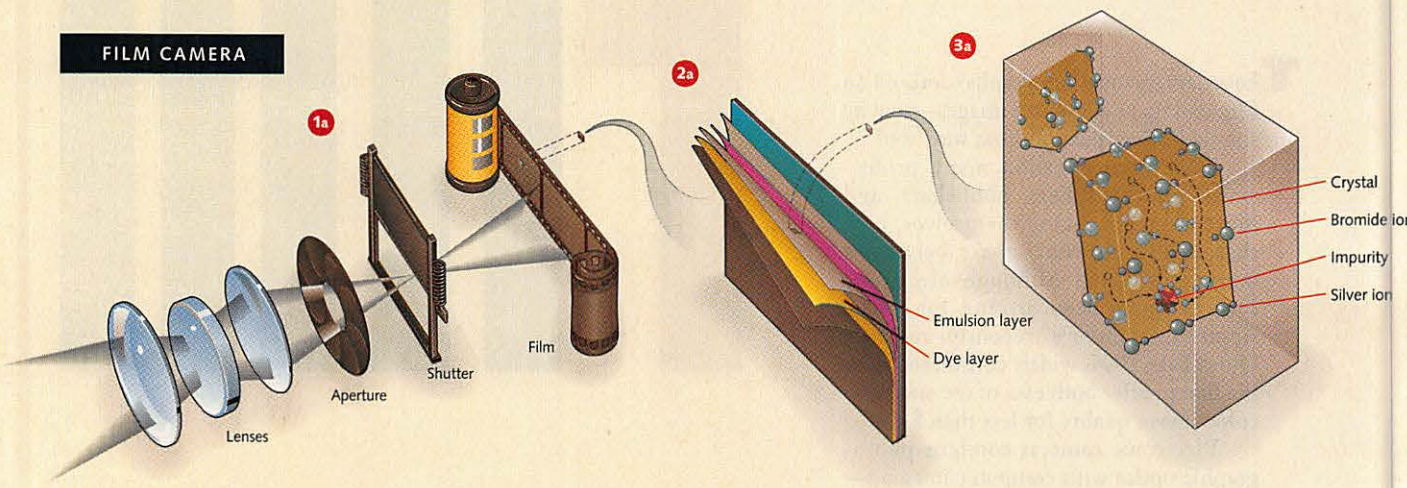
BY JIM HEID

How Digital and Film Cameras Compare

Digital cameras bring photography into the computer age, yet they operate on the same basic principles as traditional cameras. Some key differences make digital cameras better suited for electronic publishing. Below, we show the two image-capture methods at the moment light enters the camera.

Most of the parts are the same
1a and 1b) Because both cameras are based on the same principles, they share many of the same components: **lenses** focus incoming light; an **aperture** contols the amount of light entering the camera; a **shutter** controls the length of time that light comes through the aperture; and a photosensitive medium captures an image. But the similarities end here.

The medium is the difference
The two cameras use very different media to capture an image. In a traditional camera the medium is **film;** in a digital camera it's a **charge-coupled device (CCD).**
2a) Film is made of multiple layers: outside protective layers and inner **emulsion layers.** (The emulsion is a gelatin filled with light-sensitive crystals.) Color film pairs three emulsion layers—each sensitive to one of the primary colors (cyan, magenta, or yellow)—with three **dye layers,** which color the emulsion. The image forms on the emulsion layer.



changeable lenses, yet the QuickTake is a snapshot-grade camera with a fixed-focus, plastic lens. (If you own a Power Mac, you'll need to get the latest version of Apple's QuickTake Software; otherwise, the camera won't work with your computer. See this month's "Bugs and Turkeys" in *News* for more information.)

As a result, the most compelling arguments for today's electronic cameras aren't centered around image quality but around deadlines and convenience. With a filmless camera, you can see an image moments, sometimes seconds, after you take it. And an electronic camera eliminates the multistep process of taking a photo, having it developed, then scanning the film and tweaking the image on screen to obtain a high-quality digital version.

Behind the Lens

Shopping for an electronic camera means considering the conventional camera issues—lens quality and characteristics, exposure controls, size, and weight—as well as factors unique to the electronic models: imaging method, the way images are stored, and the way you transfer them to the Mac.

Electronic cameras share a common characteristic with video cameras and scanners: they contain a *charge-coupled device* (CCD), a chip containing photosensitive cells that generates voltage when struck by light (see "How Digital and Film Cameras Compare").

The field of filmless cameras is divided into two main camps: still-video and digital. A still-video camera is like a camcorder without a tape drive: it generates an analog video signal that you can display on a TV monitor, record with a video recorder, or capture with an AV Mac or a video-capture card in a standard Mac. The still-video cameras I tested include Sony's MVC-7000 ($8000) and Canon's RC-570 ($4688). Both cameras provide a composite-video–input jack. The Sony also accepts an optional S-video adapter, while the Canon RC-570 includes an S-Video–input port. (S-Video generally provides a sharper image.)

Still-video cameras have some inherent limitations. These cameras use CCDs designed to capture a full frame in two passes, grabbing first the even-numbered scan lines and then the odd-numbered ones. To accommodate this *interlacing*, a still-video camera's CCD has smaller light-sensitive cells than the *full-frame* CCDs used by most digital cameras. To compensate, a still-video camera has to do more manipulation of the CCD's data, making images more prone to undesirable artifacts: fuzzy fringes surrounding the objects in a high-contrast scene, or vibrant colors that bleed slightly into surrounding areas (see "Comparing Image Quality").

A digital camera's CCD and its support circuitry are designed from the ground up to deliver a digital result. Because the CCD doesn't require the additional elements needed for interlacing, its light-sensitive cells can be larger and closer together.

Another factor behind image quality is the CCD's size. Each of the CCD's photosensitive cells corresponds to a single pixel in the final image; the more cells the CCD provides, the higher the poten-

2b) A CCD is a multilayered silicon chip. In one layer, a grid of **electrodes** divides the surface into pixels. Each electrode is connected to **leads**, which carry a voltage. A **color filter layer** determines which primary color (in this case red, green, or blue) each pixel senses. The image forms on a layer of **silicon substrate**.

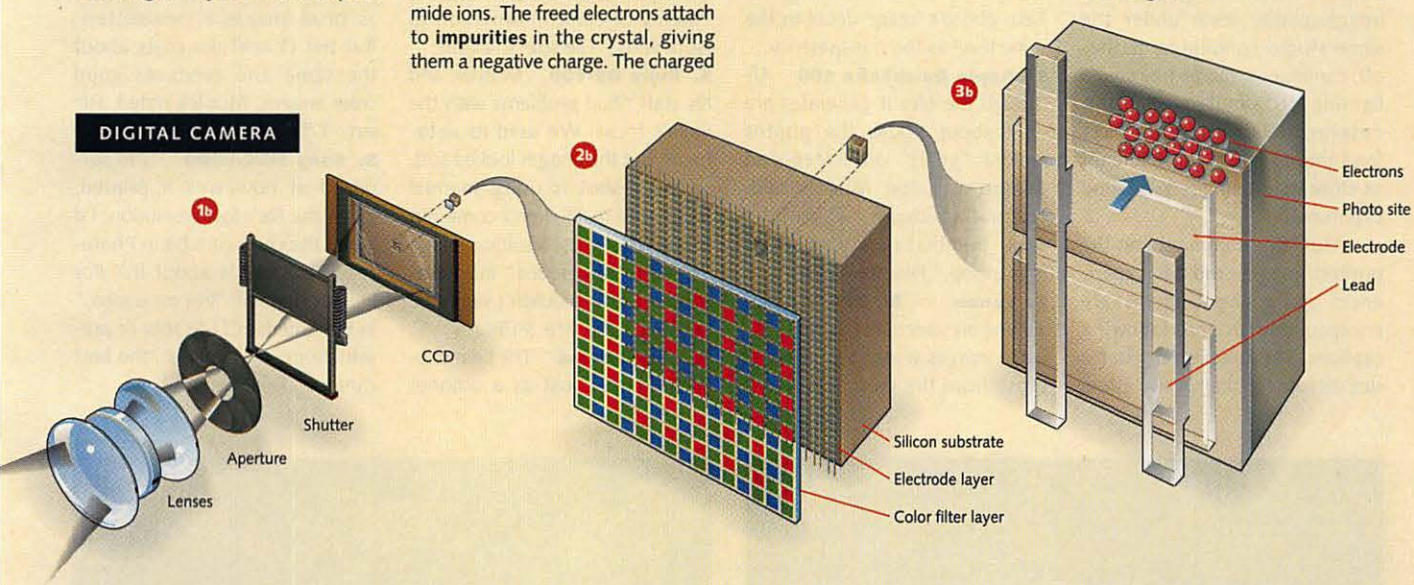
Image resolution in film is determined at the crystal level and is very high. Film can respond to a broader range of lighting conditions than a CCD, but it must be developed after exposure. Scanning adds yet another step for electronic publishers. In a CCD, image resolution is determined at the pixel level and is much lower than in film, but images captured by a CCD are immediately ready for use in electronic publishing.

What happens when light strikes

The medium's job is to record the various levels of light in the scene being photographed.

3a) Film reacts to light chemically. The crystals in the emulsion contain **silver** and **bromide ions**. When light particles strike a **crystal**, they free electrons (not shown) from the bromide ions. The freed electrons attach to **impurities** in the crystal, giving them a negative charge. The charged impurities attract submicroscopic clusters of positively charged silver ions. The stronger the light, the bigger the cluster. In exposed film these differences are too subtle to see. The development process (not shown) exaggerates the differences by enlarging the clusters, which determine how light or dark each point of the image becomes.

3b) A CCD reacts to light electromagnetically. Light particles pass through the CCD, freeing **electrons** in the silicon substrate. A voltage applied to the electrodes draws freed electrons together in special areas (called **photo sites**) in the silicon substrate. The stronger the light, the greater the number of electrons drawn together at that site. The CCD transfers captured electrons, one by one, to an analog-to-digital converter, which assigns each site a digital value corresponding to the number of electrons the site holds. In this form the image is saved to disk and is ready for use in electronic publishing. The number of electrons in a photo site determines how light or dark each pixel in the image is.



tial resolution of its image—and the larger you can scale the image without distortion. For example, Logitech's FotoMan Plus, a low-end, black-and-white digital camera, uses a 178,560-pixel CCD, while the CCD in Kodak's DCS 200 has over 1.5 million pixels. As impressive as that sounds, consider that fine-grain 35mm slide film has an estimated resolution equivalent to 20 million pixels.

Storing Images

A lowly roll of film can store more images than almost any filmless camera. Digital images devour storage space, and to hold them, filmless cameras use either battery-powered memory chips or small floppy or even hard disks.

Of the cameras tested, three store images in internal memory (called EPROM—Erasable Programmable Read Only Memory): the QuickTake 100, the Dycam Model 3, and Logitech's FotoMan Plus. The Fujix DS-100 uses slide-in memory cards, each about the size of a business card and powered by a coin-size lithium battery.

LEAF'S LUMINA: SOMETHING COMPLETELY DIFFERENT

Leaf Systems' $7500 Lumina takes a unique approach to providing higher resolution and better image quality than any under-$10,000 digital camera provides. The Lumina uses a 2700-cell array that moves across the imaging field in 3400 steps to yield resolution equivalent to a 9,180,000-pixel CCD. A complete exposure takes roughly three minutes.

The Lumina connects to the Mac's SCSI port and provides no internal image memory—the camera must always be tethered to a Mac. The Lumina accepts standard Nikon-mount lenses and has through-the-lens viewing, but the viewfinder objects appear upside-down, which makes it awkward to set up a shoot. An included Adobe Photoshop plug-in lets you adjust color balance and exposure and activate the scanning process.

You can use a Lumina on a copy stand as a substitute for a scanner; put a small light box on the copy stand's base and you can scan transparencies and negatives. But compared with scanners, the Lumina has some drawbacks. Lighting flat artwork to avoid glare and uneven illumination requires trial and error. Also, you must be careful to mount the Lumina so that its CCD's focal plane is exactly parallel to your copy stand's base; otherwise, you'll introduce distortion.

The Lumina seems best suited to photographers who want to generate high-quality images in the studio and may also want to do some scanning. It isn't perfect, but it is the least-expensive tool available for getting professional-quality digital results in the studio.

Comparing Image Quality

Images 1 through 8 represent raw Linotronic output—no retouching, no color correction—from the electronic files generated by each of the cameras reviewed. San Francisco–based photographer Stan Musilek tested each camera using its highest image-quality level under the same studio conditions: flashes off; continuous, flicker-free studio lighting to simulate daylight; cameras positioned roughly 4 feet from the still life; f11 aperture (or as close as possible); ¼-second exposure.

Musilek's comments on the printed images and his experiences using the cameras are encapsulated in the following captions. The image's original file size (before resizing) is also listed.

Image 9, taken with the QuickTake 100, was manipulated in Adobe Photoshop by Jeff Sacilotto, *Macworld*'s editorial production manager. His goal was to approximate the quality of the 4-by-5 film transparency (image number 10). Sacilotto was able to correct the QuickTake image's color so that it more closely resembled the original image. But Photoshop's Sharpen filter couldn't enhance the QuickTake photo's image detail to the same level as the transparency.

1. Apple QuickTake 100 Although the files it generates are only about 900K, the photos looked "great" on screen and printed well, too, Musilek said. The output image "was a little dark, but that's easy to fix in Photoshop." File size: 900K.

2. Canon RC-570 When viewed on screen, the Canon still-video images weren't as good as those from the QuickTake, and the contrast of the printed image "was too far off." File size: 849K.

3. Dycam Model 3 Musilek had difficulty turning off the camera's flash. "We had to tape over it; there was no other way to turn it off," he said. The final image "didn't look much better than a photocopy." File size: 531K.

4. Eastman Kodak DCS 200 The image needs some color correction, but the large files generated by the DCS 200 give the user "plenty of color information to work with." File size: 4.41MB.

5. Fujix DS-100 Musilek and his staff "had problems with the Fujix's focus. We used its autofocus, but the images looked soft, so we reshot it using manual focus, and it still didn't come out that sharp." The resulting image "could be sharpened" in Photoshop, "but it wouldn't really be worth it." File size: 915K.

6. Leaf Lumina The Leaf captures images just as a scanner does, in three passes; as a result, "it took 14 minutes to get one exposure." The final image "needs a little color correction—it's a bit too green—but otherwise it's very sharp and detailed." (Tests were performed on a preproduction model.) File size: 20.5MB.

7. Logitech FotoMan Plus The Logitech and Dycam cameras produce images that are "OK" if reproduced in real-estate fliers or as small images in newsletters. But the QuickTake costs about the same and produces good color images, Musilek noted. File size: 175K.

8. Sony MVC-7000 "I'm surprised at how well it printed, given the file's low resolution. I'd lower the contrast a bit in Photoshop, but that's about it." For images that will "live on screen," in multimedia CD-ROMs or presentations, the Sony is "the best camera." File size: 865K.



1. Apple QuickTake 100



2. Canon RC-570



3. Dycam Model 3



4. Eastman Kodak DCS 200

One drawback to storing images in memory is the need to transfer them to the Mac when you reach the camera's capacity; once the memory is full, you can't take more photos until you free up some storage space. (This doesn't apply to the Fujix DS-100; when its memory card is full, eject it and insert another.)

The Apple and Fuji cameras provide multiple image-size options. The QuickTake 100, for example, holds either 8 photos at 640 by 480 pixels or 32 photos at 320 by 240 pixels. The Fujix DS-100 lets you delete individual images to free up memory for new ones. With the Apple, Dycam, and Logitech cameras, you have to delete all the images to free up memory.

To reduce storage requirements, the Dycam, Logitech, and Apple cameras compress one image as soon as you take it. The Logitech and Dycam models require roughly ten seconds to compress one image and become ready to take another. The QuickTake 100 is ready much faster—generally within a few seconds (the exact time depends on the image). By comparison, the Fujix DS-100 and Canon RC-570 offer continuous-photo modes in which you can capture two images per second.

The Sony and Canon cameras store images on 2-inch floppies that hold up to 25 or 50 images, depending on whether you shoot in *frame* or *field* modes. Frame mode provides better image quality by



5. Fujix DS-100



6. Leaf Lumina



7. Logitech FotoMan Plus



8. Sony MVC-7000



9. QuickTake 100, enhanced in Adobe Photoshop



10. Original 4-by-5 transparency

Focus on Electronic Cameras

Company	Product	Company's Suggested Price	Lens Type	Minimum Focus Distance/ f-Stop Range	Shutter Speed Range (in seconds)	Effective ISO Rating	Built-in Flash/ Recycle Time (in seconds)
DIGITAL							
Apple Computer	QuickTake 100	$749	fixed focus; not interchangeable	4'/f2.8–f16	1/30–1/175	85	yes/7
Dycam	Dycam Model 3	$695[B]	fixed focus; not interchangeable[C]	3'/f4.5	2 1/2–1/2000	200	yes/7
Eastman Kodak	DCS 200[D]	$9995	autofocus or manual focus; interchangeable	3'/f2.2–f22	4–1/3000	50–400	no/NA
Fuji Photo Film	Fujix DS-100	$3200	autofocus; zoom	1.18"/f2–f11	1/4–1/750	100	yes/3
Leaf Systems	Lumina	$7500	manual focus; interchangeable	NA[E]	NA	NA	no/NA
Logitech	FotoMan Plus	$799	fixed focus; not interchangeable[C]	3'/f4.5	2 1/2–1/2000	200	yes/7
STILL-VIDEO							
Canon USA	RC-570	$4688	autofocus; zoom; not interchangeable[C]	1.8'/f2.5–f2.7	1/30–1/500	70–140	yes/0.3
Sony Electronics	MVC-7000	$8000	manual focus; zoom; interchangeable	1"/f1.8–f22	1/4–1/2000	100–800	no/NA

NA = not applicable. [A] The smallest number represents the maximum number of high-resolution images the camera can capture at one time. [B] The Dycam Model 4, a 24-bit color digital camera ($795), snap-on wide-angle or telephoto adapters. [D] Recently replaced by the DCS 420. [E] Lens not included.

combining two interlaced fields from the CCD, but uses twice the disk space in the camera. You can mix image modes on a single floppy and delete individual images. And when a floppy fills, you can eject it and insert a new one.

The Kodak DCS 200 is the only camera tested that accepts an optional internal hard drive and connects to an external SCSI drive. The model I evaluated had an 80MB hard drive capable of storing up to 50 images. (The new DCS 420 uses PCMCIA storage instead.)

The primary drawback of storing images on floppy or hard drives is that the drives can fail from too much physical abuse. Disk drives also require more power than memory chips, and this means less time between battery charges if you frequently insert and eject disks or review your pictures.

From Camera to Mac

So how do you get images from the camera into the Mac—and how long does the transfer take? Depends on the camera. All of the cameras tested, except the Sony MVC-7000, include or accept cables and image-transfer utilities; the MVC-7000 relies on a video-input jack.

All the image-transfer utilities work similarly: a window displays thumbnail versions of the stored images; double-clicking on a thumbnail downloads the image. Some utilities have image-enhancement features such as brightness and contrast adjustments, but you'll want a program such as Adobe Photoshop for serious image editing.

For transferring images, the Canon RC-570 uses a NuBus board whose cable attaches to a connector in the camera's battery chamber. That the board requires a NuBus-equipped Mac means you can't transfer images to a PowerBook when you're on the road. On the plus side, Canon's transfer utility is the best of the bunch, offering features that let you add antialiased (smooth-edged) text to images, resize images, and even save a sequence of images as a QuickTime movie—a capability that lets you use the camera to make time-lapse movies.

Fuji sells a $2000 interface for the Fujix DS-100 that provides a front-panel slot for the camera's memory card. The size of a large hardcover dictionary, the DP-100 Memory Card Processor connects to the Mac's SCSI port, a scheme that yields faster image transfers than the serial connections used by most other cameras. The DP-100 includes a transfer utility as well as an Adobe Photoshop plug-in module that lets you import images using Photoshop's Acquire command. (Kodak's DCS 200 also includes a Photoshop Acquire plug-in, as does Canon's SV-Mac interface board.) The DP-100 also sports output jacks for RGB, composite, and S-Video.

The DS-100 and RC-570 also provide video-out jacks (composite and S-Video for the DS-100, composite for the RC-570). You can connect either camera to a VCR, TV monitor, or any Mac equipped with video-input hardware. Buttons on both cameras let you review your shots. Numerous TV manufacturers sell tiny, battery-powered color video monitors; often used with camcorders, they make perfect preview devices for a filmless camera with a video-out jack.

If your images will wind up in a multimedia production or an on-screen presentation instead of being printed, you can use a video-out port instead of an image-transfer utility to move images to the Mac: just capture the image with your frame-grabber software. (With an AV Mac, for instance, use the Video Monitor application.) This is faster than using a transfer utility, but the video image's resolution is only 72 dpi—usually too low for printing.

Sony doesn't offer a transfer utility or Mac interface for the otherwise excellent MVC-7000—its video-out jack is the only way to move images to the Mac. The camera is superb, however, for images that will be viewed on a monitor, and it also has the unique capability of being able to work as a video camera. Connect the MVC-7000 to a videocassette recorder and record full-motion video. Connect it to a TV monitor and you have a closed-circuit TV system. Attach it to an AV Mac or a frame grabber and you can digitize live video. Its live-video capabilities make the MVC-7000 very appealing for QuickTime and video work.

The Camera Angle

Enough of CCDs, transfer utilities, and video jacks—how do these things stack up as *cameras?* The low-end and midrange units compare to typical auto-everything 35mm cameras, providing built-in flash units and using noninterchangeable lenses. The Dycam and Logitech cameras are the simplest, each sporting just one button: the shutter release. The remaining cameras in this category provide additional controls for disabling the automatic flash, activating self-timer mode, and choosing an image-quality mode. The settings of these functions appear on a small display screen, which also displays low-battery warnings and other messages.

Canon's RC-570, Fuji's DS-100, and Sony's MVC-7000 provide zoom lenses; the rest provide fixed-focal-length lenses that are roughly equivalent to a normal or slightly wide-angle lens on a 35mm camera. The Fujix DS-100 is the only midrange camera tested that provides through-the-lens viewing—you see exactly what the CCD will record. The remaining low-end and midrange cameras

Storage Method/ Image Capacity [A]	Macintosh Interface Method	Phone	Toll-Free Phone
internal memory/8 or 32	modem or printer port	408/996-1010	800/767-2775
internal memory/32	modem or printer port	818/998-8008	none
internal hard drive/50	SCSI port	716/724-4000	800/242-2424, ext. 77
memory cards/21	video input or SCSI memory card reader	914/789-8100	800/755-3854
NA	SCSI port	508/460-8300	800/685-9462
internal memory/32	modem or printer port	510/795-8500	800/231-7717
video floppy disk/25 or 50	S-Video port or SV-Mac NuBus board	516/328-5960	800/221-3333, ext. 313
video floppy disk/25 or 50	video-input port; S-Video-input port optional	201/930-7796	800/222-7669

is expected to be available for the Macintosh in August. [C] *Although its lenses are not interchangeable, this camera accepts*

provide a separate viewfinder, which means at close shooting distances, you might accidentally chop off a head or miss part of the image. The viewfinders in the Canon RC-570 and Logitech/Dycam cameras provide lines that let you compensate for this parallax phenomenon; Apple's QuickTake 100 does not.

Each of the low-end and midrange cameras is compact enough to fit in a briefcase. The Apple QuickTake 100 earns extra points for using standard AA batteries. The camera includes three rechargeable NiCad batteries, but if you lose them or can't wait for a recharge, you can use standard AA alkaline cells.

Canon and Fuji use proprietary rechargeable batteries, so be sure to take some extras along for extended photo shoots. All of the cameras tested can also operate from AC power when used with their battery chargers or adapters. (The QuickTake 100 uses the same AC adapter as a PowerBook.)

The Canon RC-570 loses points for its poor battery-chamber design. It's easy to insert the battery upside down—a mistake you won't catch until you replace the removable door and try unsuccessfully to turn the camera on. The fact that the door is removable—therefore easy to lose—is another drawback, especially since you have to remove the door and set it aside when using the SV Mac digitizing board.

The Sony MVC-7000 and the Kodak DCS 200 have the same amenities found on a 35mm SLR camera. Both accept a variety of lenses designed for Nikon or Canon bayonet mounts. (The Kodak DCS 200 actually uses a Nikon 8008 body.) Both provide through-the-lens viewing, hot shoes for attaching flash units, and center-weighted or spot metering options. Unlike the other cameras, both also allow you to specify a desired ISO rating in order to control depth of field (the distance range within which objects will be in focus).

The Sony MVC-7000 is a sumo-size camera that weighs nearly 6 pounds, including the 8mm-to-48mm zoom lens that's standard equipment. The DCS 200 is more manageable, weighing 4 pounds and sporting rounded contours that make the camera more comfortable to hold.

The Last Word

Who should consider the current crop of cameras? Low-end and midrange models are best for business and industrial applications: real-estate agents snapping houses for listing sheets and databases; insurance-claims adjusters recording dents and accident scenes; personnel departments snapping photos for ID badges; and any professional wanting a fast way to include images in documents such as reports, newsletters, and brochures.

In this league, the QuickTake 100 is the best. The Canon RC-570's image quality is inferior, but the camera's zoom lens, floppy drive, video-input jack, and the superb SV-Mac board and transfer utility make it a much more versatile system. Indeed, the ideal filmless camera would combine the RC-570's goodies with the QuickTake 100's image quality and superior industrial design.

The Fujix DS-100's image quality sits in between that of the QuickTake 100 and the Canon RC-570. The DS-100's memory cards eliminate broken floppy worries, and the camera provides a more sophisticated lens and SLR viewing. But the DS-100 is costly, especially considering you need the $2000 DP-100 Memory Card Processor to transfer images to the Mac. Don't bother with the Dycam or Logitech models; they cost roughly the same as the QuickTake 100 but render images that are infinitely inferior.

The high-end cameras are well suited to newspaper photojournalism, law-enforcement and military-documentation applications, scientific and medical imaging, and low-budget catalog and newspaper advertising photography. Of the two high-end models evaluated (the Kodak DCS 200 and the Sony MVC-7000), the DCS 200 is better, thanks to its smaller size and lower weight, its SCSI interface and optional internal hard drive, and image quality. With new and enhanced features, such as PCMCIA storage and faster image-capture speed, the new DCS 420 should be even better. The Sony MVC-7000's video features make it a strong contender for multimedia developers, however.

Regardless of the advantages digital and still-video cameras offer, don't expect them to supplant film anytime soon. Consider the components required: a computer with good graphics capabilities and lots of storage, color-calibration software, image-enhancement software, image-database software, and a continuous-tone printer. Throw in the expertise needed to use it all, and you're likely to have a new appreciation for the simple slogan that helped George Eastman build his photographic empire: "You push the button, we do the rest." **m**

Contributing editor JIM HEID has worked as a darkroom technician. His latest books are *Macworld Complete Mac Handbook Plus Interactive CD*, third edition (1994), and the forthcoming *Macworld Word 6 Companion*, both published by IDG Books Worldwide.

The author wishes to thank Alexis Gerard, editor of the *Future Image Report* (Burlingame, California), an industry newsletter that covers the electronic-imaging field, for providing technical information.

ELECTRONIC CAMERAS

MW EDITORS' CHOICE

For business imaging, location and prop testing, or deadline-intensive photography—the best uses for electronic cameras today—one camera stands out.

Apple QuickTake 100 A disposable camera provides better image quality, but the QuickTake 100 breaks new ground nonetheless by offering good color digital images for under $1000. **Company:** Apple Computer. **Company's suggested price:** $749.

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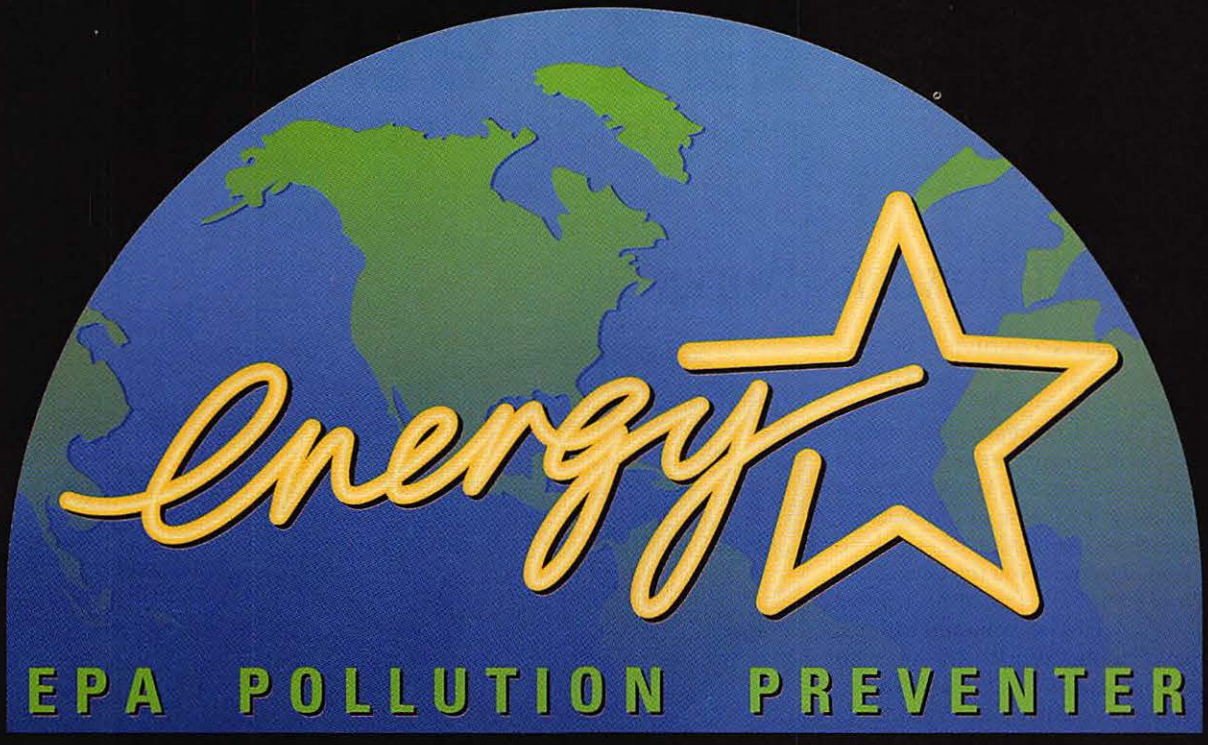
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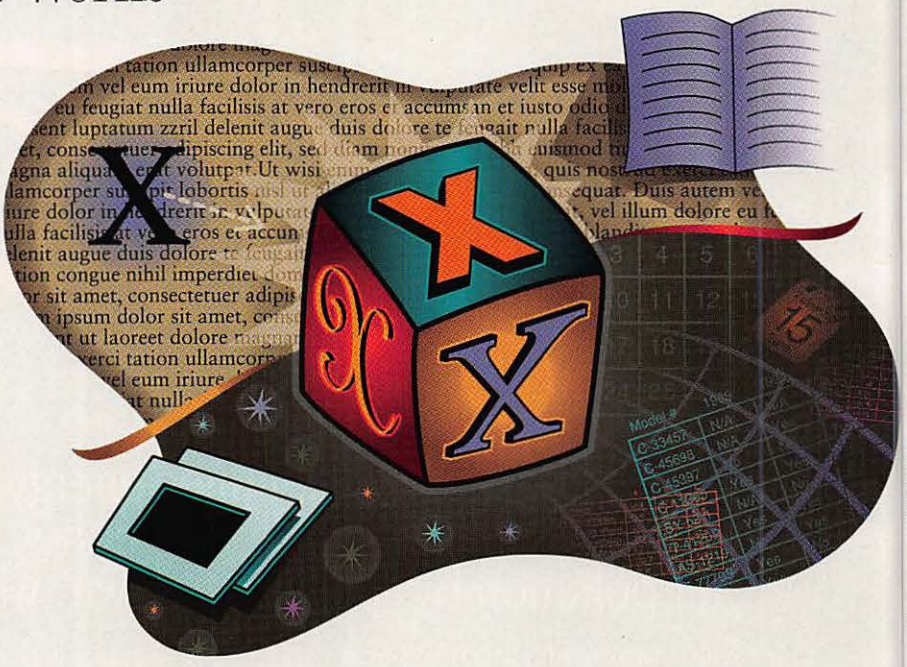
THE LATEST TOOLS FOR BUSINESS COMPUTING

Microsoft Reworks Works

MICROSOFT IS THROWING IN THE kitchen sink with its everything-under-one-roof package, Works—all for a street price that the company estimates at $99 (Microsoft products no longer have list prices). With version 4.0, Works has gone from an integrated suite of productivity applications to a collection of just about every kind of software you can imagine.

To version 3.0's spreadsheet, word processor, database, communications, and paint tools, Works 4.0 adds an address book and calendar, a table editor, slide-show capability, and WordArt (a tool for distorting and playing with type), not to mention an equation editor, fonts and clip art, Bookshelf (a viewer for electronic books), and Encarta (a multimedia encyclopedia). However, the money saved on software will be quickly spent on hardware: Works 4.0 requires a minimum of 4MB of RAM—9MB if you install everything—and 5MB to 16MB of disk space.

In previous versions of Works, the spreadsheet, word processor, and database modules created separate files. In version 4.0, the modules take advantage of OLE 2.0 (implemented on the Mac through Apple events) to support embedding and editing documents inside other documents—for example, a chunk of spreadsheet inside a word processor file. Works 4.0 should be shipping now, and a Power Mac version will be available sometime this fall. Microsoft, 206/882-8080, 800/426-9400.—D.L.



JEFFREY PELO

Parade of PIMs

PORTFOLIO SYSTEMS IS GETTING ready to ship Day to Day, a calendar companion to Portfolio's address book program, Dynodex; at the same time, a French company, ComposeTel, has set up shop here to market its Dynodex competitor, Souvenir, to Americans.

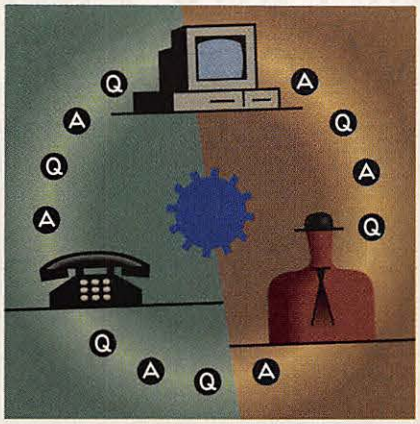
Day to Day provides day, week, and month views—and a year view for scheduling vacations—and can show an event's text in a balloon, which saves you from having to open events while you scan your calendar. You can attach external files to events (for example, an agenda for a scheduled meeting); add banners across the top of events without obscuring their contents; and create event templates with preassigned priorities, categories, and so on. Dynofind, an extension that adds a minimenu providing Dynodex access from any application, is being superseded by a similar extension that adds access to Day to Day events.

Souvenir (French for *remember*) is unusual for an address book: it is an extension, so once installed, it is always open. It can search multiple Souvenir files for a record; copy multiple fields, such as addresses, to paste into letters or label templates; and adjust its autodial feature when you tell it what area code or country you are in.

Souvenir should be shipping for $99 as you read this. Day to Day should ship in September for less than $100, and a Power Mac version will ship soon after. ComposeTel, 415/327-0744; Portfolio Systems, 802/434-6400.—D.L.

Automated Interviewing

SENECIO SOFTWARE IS SHIPPING A suite of interview-design and -execution programs that are equally suited for selling products and conducting surveys.



DOUG ROSS

MaCATI 2.0 (Computer-Assisted Telephone Interviewing) includes an editor for designing a sales pitch or survey; you can control both how it looks on screen and how it flows (for example, a sales pitch could be designed to skip background information if the lead is familiar with your products). MaCATI also features a database engine that delivers telephone numbers over a network to people staffing the phones and compiles the data they collect. Version 2.0 of MaCAPI/DMS, or Computer-Assisted Personal Interviewing/Disk-by-Mail Survey, is similar, but it compiles information from a stack of floppy disks or files created during face-to-face sessions.

Both products come with a prerelease version of FloStat 2.0, a statistics package that reads CATI and CAPI/DMS files. Senecio says FloStat is stable, and the company will upgrade all customers when the final version ships.

MaCATI and FloStat run on the Power Mac under emulation. Prices for MaCATI start at $3500 for six users; MaCAPI/DMS costs $1995 and includes run-time versions for floppy disks or in-person interviewers. FloStat will also be sold separately for $249. Senecio Software, 419/352-4371.—D.L.

IN BRIEF

Blyth Expands Omnis Blyth's Omnis 7³, which should be shipping when you read this, includes a templating tool to simplify adding SQL access to a database; a graphing tool that lets end users explore and graph data in a live database; and direct support for Lotus Notes, Microsoft Mail, and a large selection of middleware products. Users can design and deploy databases on any mix of Mac, Windows, and OS/2 platforms, as well as several flavors of Unix. Omnis 7³ is priced at $5000 for a developer kit with unlimited run-times to access one database; run-time pricing varies for access to multiple databases. A Power Mac version is scheduled for release in the fall. Blyth, 415/571-0222.

New Owner Updates DAL In January, Independence Technologies took over Apple's database-connectivity middleware DAL (Data Access Language) and is upgrading both client and server versions to 1.5. The DAL 1.5 client's major enhancement is support for ODBC (Open Database Connectivity), Microsoft's standard database-access tool. Pricing for the client version starts at $149 per user; volume discounts are available. The DAL 1.5 server upgrade adds support for systems from DEC, IBM, and others, as well as for new operating systems and databases. DAL 1.5 server pricing depends on configuration. Independence Technologies, 510/438-2000.

Put Your Calendar on the Desktop

KNOWN FOR AFTER DARK, THE screen saver that covers up your data with flying toasters, Berkeley Systems is about to bring your data to the foreground with Expresso Calendar and Address Book, which can display your calendar as a Mac desktop pattern.

Expresso has features common to personal information managers, such as recurring events, drag-and-drop scheduling, configurable views, to-do lists, reminders, and envelope and label printing. Users can share files on a network while password-protecting personal events.

The desktop calendar is a static image rather than a live calendar, so to update it when you change your schedule, you must issue the FlashBack command. Expresso comes with 20 looks for customizing the appearance of calendars, and in October Berkeley Systems plans to offer an add-on with about 8 Trekkie looks from "Star Trek: The Next Generation."

Berkeley Systems says Expresso can import files from Now Up-to-Date and Now Contact, DateBook and TouchBase, Dynodex, and DayMaker. It lists for $69.99 and should ship in September; a native Power Mac version will be available several months later. Berkeley Systems, 510/540-5535.—JOANNA PEARLSTEIN



Expresso replaces your Mac's start-up screen with your calendar, your list of to-do items, and other PIM-like information.

ACT 2.0 Leapfrogs Contact Management

WHILE SYMANTEC'S CONTACT-manager and work-organizing tool, ACT, doesn't include a kitchen sink (see "Microsoft Reworks Works," in this section), version 2.0 is full-featured enough that it could become the focus of many users' workdays.

With its roots in sales automation, ACT (Activities, Contacts, and Time) performs tasks such as automatically scheduling a follow-up call after you send a letter, and compiling a history of activities for each person in your contact database. The 2.0 upgrade is geared primarily toward supporting workgroups: users can share both Mac and Windows ACT files over a network, send messages (such as the name and contact history of a person in the database) from ACT directly into E-mail using AOCE, and import each other's calendars when scheduling meetings. Version 2.0 can group contacts to, for example, create a special mailing list or project team. The upgrade also has full-featured database query capabilities, and it supports fax-merging with Faxstf. It can print in Day-Timer, Filofax, Day Runner, and Franklin formats (Symantec will sell paper for those formats), as well as many Avery label formats.

ACT 2.0 should ship in September in intelligent fat-binary format for 680X0 and native Power Mac installation. It will list for $249.95. Symantec, 503/345-3322, 800/441-7234.—D.L.

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BY JIM HEID

Working Smart

Microsoft Word 6: Best and Worst

IF GERALDO EVER DOES A PROGRAM ON love/hate relationships, you can bet there will be a Microsoft Word user on the stage. The Macintosh world's most popular word processor certainly isn't the easiest to use, but it is (arguably) the most powerful. As I write this, Microsoft (206/882-8080) is preparing the most significant Word upgrade ever: version 6 (estimated street price $325), which should ship about the time you read this, introduces dozens of changes, ranging from a new look to a built-in programming language.

Part of the price for power is that Word 6 won't run on 68000-based Macs, such as the SE or the PowerBook 100, and it requires 4MB of memory (8MB on a Power Mac) and between 5MB and 20MB of disk space, depending on the options you install. (By comparison, WriteNow 4.0 requires only half a megabyte of memory and 1.4MB of disk space.)

Another part of the price: Word 6 so differs from Word 5 that the first time I saw Word 6 was like finding my house completely remodeled by someone whose tastes I don't share. But I'm getting used to it, and the aspects of Word 6's design that I don't like are offset by some genuine interface improvements and bone-crunching power. My love/hate relationship has only grown more torrid.

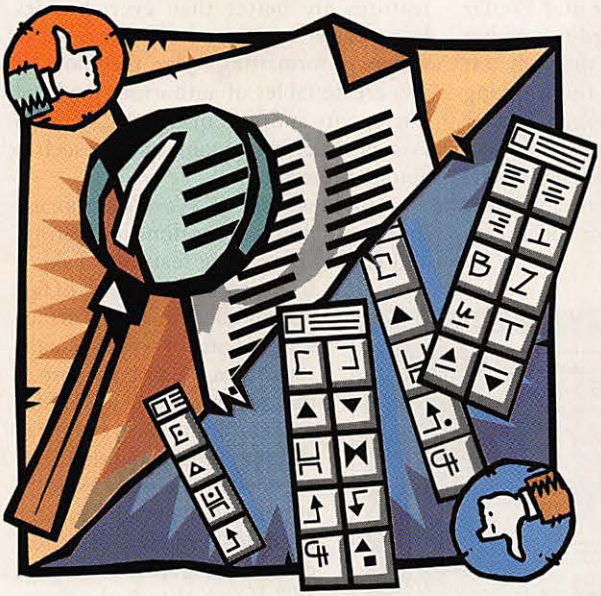
Although I am candid in this column about what I like and don't like, this isn't a review; the information here is based on prerelease versions of the program.

A Prettier Interface?

On a color or gray-scale display, everything in Word 6, from rulers to dialog boxes to pop-up menus, has a three-dimensional appearance—Microsoft should include 3-D glasses in the box.

The dialog boxes themselves are bigger and busier. Most have a preview window that shows the settings you've chosen; gone is the Apply button that Word 5.1 used. Many dialog boxes also have file folder–like tabs that act as gateways to additional options—click on a tab, and its options appear (see "A Guided Tour of Word 6").

The other big interface news is on-screen tool bars for nearly everything. The Font menu, for example, is gone—to choose a font, you use the Formatting tool bar. The ruler icons for changing paragraph justification are gone—you now use the Formatting tool bar. The Show ¶ command has become an icon on the Standard tool bar. Display all ten (!) tool bars at once on a standard 14-inch monitor and you can see roughly 2 inches of your document window. Fortunately, you'll rarely need more than the Standard and Formatting tool bars, and you can customize tool bars to contain only those tools you actually use. And if, like me, you have trouble remembering which icon does what, you'll appreciate Word 6's ToolTips feature, which identifies a tool when you point to it—it's like System 7 balloon help without the balloons.



Transition Tip: Interface If you miss the Font menu, you can re-create one using the Customize dialog box's Menus tab. While you have the Customize dialog box open, you might want to create one mega–tool bar with just the tools you use most often.

The Template's the Thing

The single biggest difference between Word 6 and Word 5.1 is Word 6's concept of document templates. If you're a Word 5 veteran, you know that you can create stationery documents, which hold boilerplate text and formatting; glossary files, which store often-used text and graphics; and multiple settings files, which store customized menus and keyboard shortcuts.

A Word 6 template combines the functions of stationery, glossary, and settings files into one file, and throws in some additional capabilities for good measure. A template can hold boilerplate text; glossary entries (renamed AutoText); and your customized keyboard shortcuts, menus, and tool bars.

Templates provide some powerful possibilities. Using Word 6's macro language, you (or a consultant or in-house programmer) can create customized menus that supplement or even replace Word's menus. A template for a weekly status report might have a menu called Assemble with commands to retrieve report contributions from coworkers and put them together in a formatted document; or a writer might create a template called Manuscripts that customizes Word's menus to remove advanced formatting commands the writer never uses.

If you open several documents based on different templates, Word's user interface can change dramatically as you switch from one document window to another—commands appear or disappear

continues

ROB DUDLEY

and keyboard shortcuts and tool bars change. It's a recipe for confusion.

Transition Tip: Templates Your Word 5 stationery documents will still work under Word 6—in fact, you can use them as foundations for templates—but inserting AutoText entries from the keyboard is different in the new version. In Word 5, you pressed ⌘-backspace, then typed the shortcut name, then pressed return. In Word 6, you first type the entry's name and then press ⌘-option-V. To convert a Word 5 glossary file for use with Word 6, simply open it under Word 6 (to see it in the Open dialog box, you'll have to select the All Files option from the List Files of Type pop-up menu).

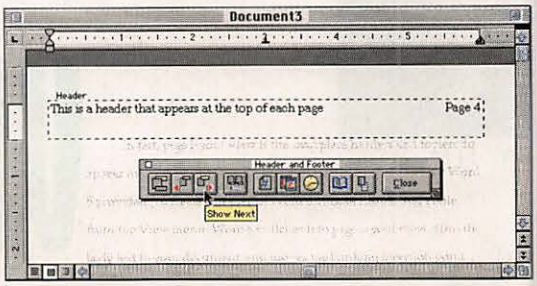
What You See, What You Get

Word 6 lets you zoom in and out from 10 percent of normal size to 200 percent, and all features are available at any scale. Microsoft was obviously thinking of WordPerfect 3's zooming.

The page-layout and print-preview modes show some big changes. Page layout has a vertical ruler for adjusting the document's top and bottom margins by dragging them up and down. And page-layout view is the only place headers and footers appear in Word 6—gone are Word 5's Header and Footer windows. When you choose Header and Footer from the View menu, Word 6 switches into page-layout view; dims the body text in your document; moves the blinking insertion point into the page's header area; and brings up yet another tool bar, this one bearing icons for including the date and time, page numbers, and other information in the header or footer (see "Getting a Header").

As for the print-preview mode, it's now live—you can type and edit text and move items around in the preview window. The print-preview window also supports zooming. Zoom out far enough and you can see multiple pages at once and drag items between them.

Transition Tip: Headers I guarantee that Word 6's approach to headers and footers will irritate you. It's cumbersome to display a document in page-layout view just to add a header, especially on slower Macs. For complex documents, create your headers and footers before doing anything else—that way, you won't have to wait for Word to convert your document to page-layout view.



Getting a Header In Word 6, you must create and edit headers and footers in page-layout view. Pop quiz: What do the tool bar icons mean? The ToolTips balloon ("Show Next") helps you remember.

Power Publishing Features

Word 6 moves a step closer to being a full document-publishing tool in the league of Frame Technology's FrameMaker. Word now lets you create multicolumn pages with columns of unequal width, and it provides much better drawing features, including terrific tools for creating labels that identify portions of an illustration. Word's indexing and table-of-contents features are better than ever; besides being easier to use and offering a wider variety of formatting styles, they now let you create tables of authorities for legal documents and lists of figures. Word 6 even provides typographic niceties such as automatic kerning.

Most exciting are Word's automatic figure-numbering, caption-generating, and cross-referencing features. Take it from me: keeping track of figure numbers in a long manuscript is one of writing's ugliest chores. Adding a figure at the beginning of a chapter means renumbering the remaining figures and their references in the text. Word 6 automates all of this. Say your document contains the reference "See Figure 2-17 on page 54." If you change the figure number and move it to a different page, Word 6 automatically updates the reference.

Word 6 also streamlines linking chapter files into a book or manual—a step that's necessary to generate an index or table of contents that spans a group of files. Word 5's arcane File Series dialog box has been superseded by a new type of document called a master document; like an Excel Workbook, a master document can contain the documents that constitute a complete publication.

Transition Tip: Publishing If you've been preparing documents in Word and then importing them into Aldus PageMaker or QuarkXPress (or FrameMaker), try using Word 6 to do your page layout, too; once you go to a page-layout program, you can't take advantage of Word's automatic cross-referencing.

Macro Mania

One of Word 6's most impressive new features is its macro language, WordBasic. If you don't need to create new functionality and simply want to automate several tasks—opening a file, searching and replacing some text and some formatting, saving, and then printing—you can use Word's macro recorder, which watches over your shoulder and records what you do. You can assign a recorded macro to a menu, to a tool bar, or to a keyboard shortcut.

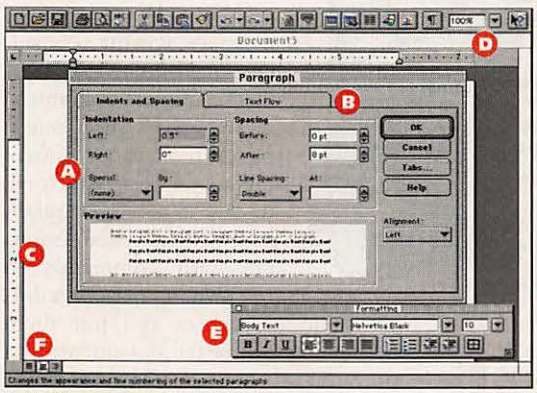
Transition Tip: Macros If you've been using CE Software's QuicKeys or Affinity Microsystems' Tempo to automate Word tasks, you can probably use WordBasic to perform the same tasks, as well as more-complex ones. When you catch yourself repeating a task, try recording it as a macro.

Little Things that Count

Word 6 is full of little enhancements.

AutoCorrect AutoCorrect watches over your shoulder and corrects your mistakes as you work. It doesn't check the spelling of every word you type, but it does check for common blunders such as a word beginning with two capital letters, and it compares what you type to a built-in list of AutoCorrect entries, such as *teh* instead of *the* and *seperate* instead of *separate*. You can add your own problem words to the list and use AutoCorrect to type often-used words or phrases for you automatically when you enter an abbrevi-

continues



A Guided Tour of Word 6 Word 6's interface differs dramatically from its predecessors'. Many dialog boxes **(A)** have a preview window and tabs **(B)** that display additional options when clicked. Word 6's page-layout and print-preview windows have vertical rulers **(C)** for adjusting top and bottom page margins. You can zoom in and out in all views using the zoom controls on the Standard tool bar **(D)**. You can also choose to display tool bars as floating palettes **(E)**, and switch between views using new icons located in the lower left corner of the document window **(F)**.

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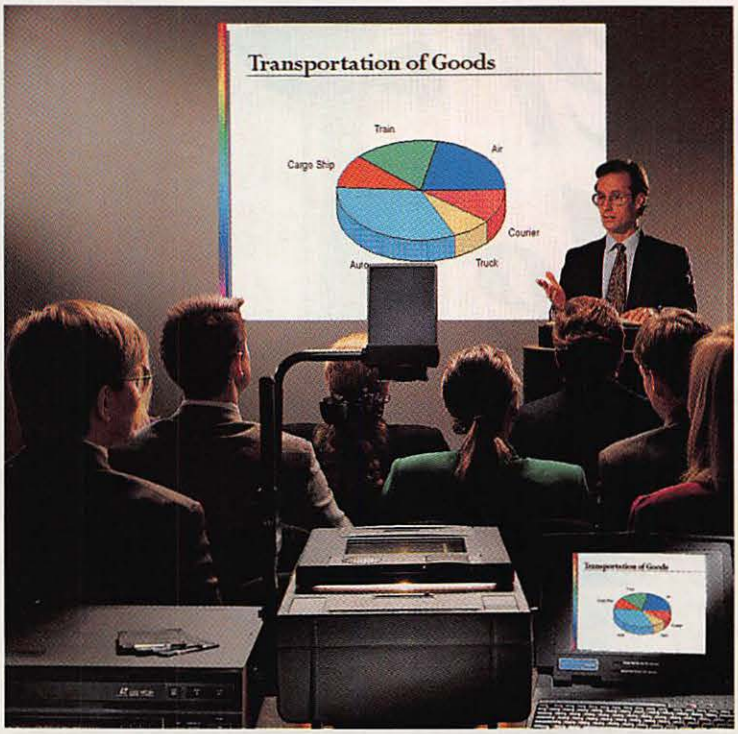


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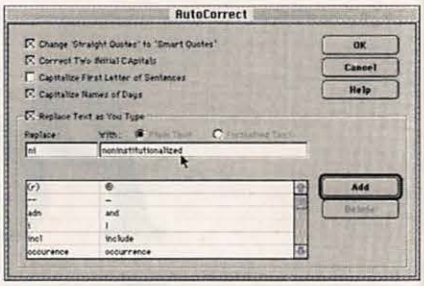
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AutoCorrect at Work The AutoCorrect feature corrects common typos. You can also set it up to enter often-used text when you type an abbreviation.

ation (see "AutoCorrect at Work").

Drag and drop Word 5's drag-and-drop editing was great for moving text or graphics within a document. Word 6 lets you drag them between documents.

The Spike This violent-sounding feature provides a multilevel Clipboard (it's named in honor of those desktop needles where old phone messages are impaled). The Word 6 Spike accumulates text and graphics on the Clipboard instead of overwriting what is already there, so you can move multiple items at once.

Multiple undos and redos You can undo or redo more than just your last action by using the undo and redo tools on the Standard tool bar.

Revision tracking Word 6 provides the best revision-tracking features I've seen in a word processor. When revision tracking is on, a vertical change bar appears in the left margin adjacent to revised lines, while Word underlines text you've added and draws a line through text you've deleted.

Should You Switch?

If you're a Word 5 user, should you upgrade to Word 6? If you have a 68000-based Mac, you can't—either stick with Word 5 or switch to a different program. This advice may also apply if you have a slower 68020- or 030-based Mac, such as the LC, IIcx, or IIsi. Try out Word 6 on a machine similar to yours to make sure you'll be happy with its speed.

If you have a reasonably fast Mac and enough hard disk space and memory—and if you do a great deal of word processing—by all means consider the Word 6 upgrade. You won't like the look and feel of the program at first, but as you become familiar with it (and as you customize it to restore the Word 5 keyboard shortcuts you've memorized), you'll realize it's the best Word yet. m

Next month: Is Your Mac Secure?

Contributing editor JIM HEID's latest books are *Macworld Complete Mac Handbook Plus Interactive CD*, third edition (1994) and *Macworld Word 6 Companion* (1994), both published by IDG Books Worldwide.

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by Franklin N. Tessler

Address Books Compared

MACWORLD RATES SIX CONTACT MANAGERS

No matter what kind of work you do, hunting for addresses and phone numbers is a chore that you probably perform numerous times a day. Not so very long ago, a pocket-size address book was a convenient, if somewhat inflexible, place to record names and phone numbers. If that wasn't enough, you could staple business cards into a file—useful as long as your work never took you away from your desk. Today, however, you, your friends, and your colleagues are probably traveling on the job, working out of rental cars, hotels, your homes—even the office—and keeping in touch with each other through a constellation of electronic-mail and online addresses, fax and cellular numbers, remote-network access codes, and more. With the need for instant access to so many numbers, managing contact information on paper is more trouble than it's worth.

Fortunately, your Mac is an ideal tool for storing and retrieving lists of names, addresses, numbers, and other contact information. For this article, I looked at six dedicated contact managers: Address Book Plus, Dynodex, Intouch, Now Contact, Super QuickDex, and TouchBase Pro. (For capsule summaries of three upgrades that were in beta while I was writing this article, see "New Addresses.")

In the past, most address book programs were meant to be used alone; if you also needed a calendar and a to-do list manager, you had to buy separate programs. And if you wanted both functions in a single package, you had to consider a full-blown personal information manager (PIM). But now vendors are making the choice more difficult by marketing separate contact managers and schedulers that can work together as a unit: Advanced Software's Intouch, Aldus's TouchBase Pro, and Now Software's Now Contact can all exchange data with companion contact managers, yet all of them work just fine on their own. (Portfolio Software's Dynodex will have a similar calendar before the end of 1994.)

Although PIMs often use more memory and take longer to learn than single-

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Contact Managers: Quick Facts

Product	Company	Phone	List Price	Number of Fields [A]	Recommended RAM	Size of 2000-Record File [B]	Time to Open Sample File (in seconds)	Search without Launching Application
Address Book Plus 2.01	PowerUp Software	415/345-5900, 800/851-2917	$99.95	19 + notes	800K	480K	11	no
Dynodex 3.5 [C]	Portfolio Software	802/856-2700, 800/729-3966	$69.95	21 + notes	832K	193K	6	yes
Intouch 2.1 [C]	Advanced Software	408/733-0745	$99.95	2	NA [D]	200K	4	yes
Now Contact 1.0.1 [C]	Now Software	503/274-2899, 800/237-2078	$99.00	28 + notes	1000K	277K	5	yes
Super QuickDex II 2.72 [C]	Casady & Greene	408/484-9228, 800/359-4920	$89.95	1	NA [D]	161K	3	no
TouchBase Pro 3.01 [C]	Aldus	619/558-6000, 800/888-6293	$125.00 [E]	34 + notes	750K	1.5MB	7	no

NA = not applicable. [A] Includes checkboxes. [B] Launch from Finder on Mac IIfx with Quantum 210MB drive. [C] Runs in emulation mode. [D] Desk accessory. [E] Price includes DateBook Pro.

function programs, they are more tightly integrated and avoid the hassle of setting up separate calendar and contact files. Also, the storage and memory demands of an address book and calendar manager combined may outweigh even a bulky PIM. Still, separate programs are more economical if you only need the functions they provide, and you can always add the other module or modules later.

Structured versus Free-form

Contact managers use two fundamentally different methods for entering and displaying data. Address Book Plus, Dynodex, Now Contact, and TouchBase Pro are structured, storing and displaying information—such as names, cities, and telephone numbers—in specific fields. Because every piece of data has its place, it may be difficult to accommodate special cases. For example, if your file has fields for two phone numbers and one E-mail address, you're stuck if someone has an extra number, say for a cellular phone, or has an online account. You can circumvent this limitation by using the notes field provided by all four programs for storing information that doesn't belong anywhere else, but then some information about your contacts won't be in the right place when you print your address book. Address Book Plus's notes field holds 2K, or about 300 to 400 words—plenty for static information, but not much room for notes on phone calls and correspondence. Dynodex's notes field holds 5K; TouchBase's and Now Contact's, 32K.

The field-oriented approach supports features that outweigh its limitations, such as shortcuts that make entering data faster and more accurate. For example, Address Book Plus, Dynodex, and TouchBase Pro all let you define pop-up lists of cities or states to select from, so that once you get Conshohocken or Mississippi right in the pop-up list, you'll get them right every time you create a new record that uses them (see "Pop-up Entry"). A similar and more efficient feature automatically scans new entries as you type—as soon as an entry matches an item from a predefined list, the software inserts the whole item. All the field-oriented programs except Now Contact can do this.

Automatic text-formatting is another benefit of field-based contact managers. For example, you can type quickly without bothering to hit the shift key; the program capitalizes the first letter of every word for you (all four programs let you disable autoformatting to accommodate special circumstances, such as some foreign or company names). Similarly, if you're fussy about the appearance of telephone numbers, Dynodex, Now Contact, and TouchBase Pro can format numbers automatically; only Dynodex and Now Contact let you edit and create new phone number formats, however.

Still, the field-based contact managers are probably not for you if you can't stand forcing your information into fields. In addition, fields are limited in size—for example, TouchBase's first-name field displays only about 12 characters at a time, even though it can store more. That means you could type in a contact's name with his or her spouse's name, for example—but you may not be able to see both names.

If you do opt for a field-based program, you'll want to be able to tailor the fields to suit your data, rather than dismember your data to fit in the fields. TouchBase provides several user-definable text, date, and number fields, and Now Contact lets you specify up to eight custom fields for each contact. Dynodex and Address Book Plus are even more flexible, letting you change the name of any field (see "Open Fields").

The Unstructured Approach

The alternative to field-based contact managers is exemplified by Intouch and Super QuickDex. Super QuickDex has only one field for everything—names, addresses, telephone numbers, and notes (see "Fast and Simple"). Intouch takes an intermediate route: it has two fields. If you want to print labels or use autodialing in Intouch, you must use one field for the name and address and the other field for phone numbers and notes (see "Free-form Data").

A major benefit of free-form contact managers is that they cheerfully accept any text you throw into them. You don't have to worry about how long an address is, as you do with field-based programs; you simply use as many lines as you need, and you can enter the information in any order that strikes your fancy.

Of course, free-form programs have disadvantages as well. For one thing, the lack of fields rules out shortcuts and automatic formatting during data entry, because the software can't distinguish between a contact's name and state, for example. The free-form approach also makes sorting the file tough.

Comments
Notes field limited to 2K. Contacts can be categorized.
Multiple phone number formats. All field names can be changed. Can synchronize files. Includes DA version with limited functionality.
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Excellent detail view. Fast. Shares information with Now Up-to-Date. No file synchronization or duplicate checking. Limited entry shortcuts.
Very fast. Excellent phone-dialing options. Primitive user interface. Requires separate application and DA to sort, print, and export.
Two-way data sharing with DateBook Pro. Excellent file-synchronization and search functions. List view is easy to customize.

Beyond the Basics

■ **Searching** All the contact managers let you search for specific character strings. However, Super QuickDex II scans for only one string at a time; you have to run a separate application called PrintDex II to do anything more complex. Intouch lets you restrict your search to either of its two fields, and you can look for records that do or don't contain the specified text. Because you cannot limit scans to specific fields, searching the unstructured files should, in theory, take longer than searching the structured ones, but in routine use, the programs are all so fast that it is not a practical consideration.

Of the field-oriented programs, TouchBase provides the most flexibility in defining searches. Its Quick Search option lets you scan a single field; choosing Full Search from a pop-up menu lets you specify any subset of fields to search, though selecting the fields is less convenient than it should be. You can also define compound searches using AND and OR operators. None of the competing contact managers offer as much flexibility in searching as TouchBase.

Two of the programs—Dynodex and Now Contact—let you search for names and numbers using a menu that appears in all applications, without actually opening the data file; you can even add your favorite contacts' names and numbers to the menu. Intouch provides similar functionality with a control panel called Snap, which lets you look for contacts without launching Intouch.

■ **Import/Export** All six contact managers let you import and export data, usually as tab-delimited text files. Not surprisingly, importing records is much easier with field-based programs, since you can specify exactly which fields the incoming data should go into. Importing text into QuickDex is especially frustrating, and your file may require extensive cleaning up afterward. Intouch comes with an import utility that vastly simplifies the process of transferring data from structured programs. Exporting unstructured records into either of the structured programs is equally problem-filled, however.

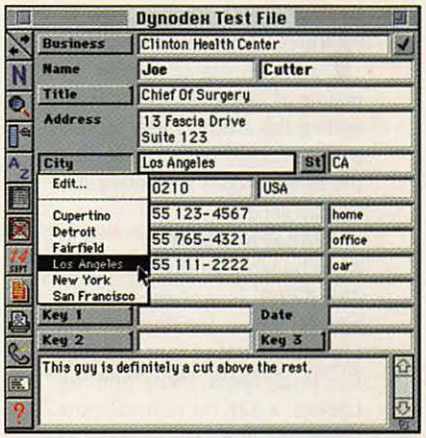
■ **Duplicate-Checking** Unless you are very careful, sooner or later your contact list will become littered with duplicate records. To help weed them out, both Dynodex and TouchBase provide special commands that locate duplicate entries for you automatically. With both programs, you have to specify which fields must match for two records to be considered duplicates. Unfortunately, Now Contact doesn't include a function to find duplicate contacts.

■ **File-Syncing** If you carry a copy of your contact list with you on a PowerBook and also keep a copy on your desktop Mac, you'll probably add and change records in both versions of the file. TouchBase and Dynodex can reconcile changes between the two data files. Of the two, TouchBase gives you more options for merging the two files. TouchBase also has a timesaving feature: it can create a file containing just the modifications you make to one version of the address book, which you can later import into the other version. File synchronization is absent from Now Contact.

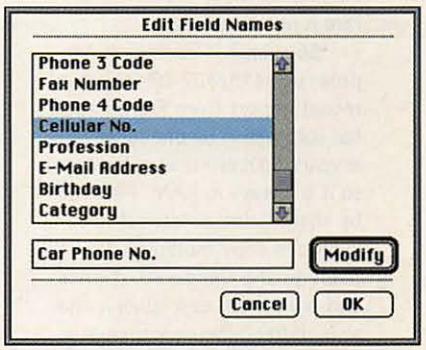
■ **Viewing Data** All the programs except Super QuickDex can display data in a list and record-by-record. (You can display list views of Super QuickDex data files using PrintDex II.) TouchBase lets you toggle between list and detail views, but it does not let you display both at the same time. Its list view is especially easy to customize—you indicate which fields to display by selecting from pop-up menus at the top of each column (see "Easy Lists"). Now Contact provides the most flexible detail view, with six fixed-size blocks of data that you can rearrange to your liking (see "Fine Details").

■ **Creating Subsets** All the programs except Super QuickDex let you flag individual contacts, a handy way to isolate a subset of contacts for printing or export. Intouch and Address Book Plus also let you assign contacts to categories that you define; in TouchBase or Dynodex you can use custom fields to achieve a similar effect. Now Contact provides two schemes for organizing contacts: you can group contacts into categories as well as assign them keywords.

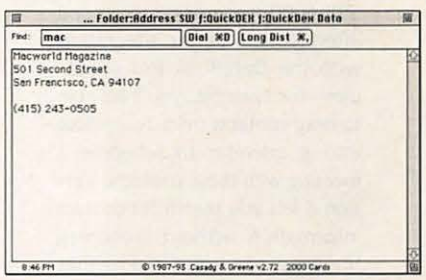
■ **Sorting Records** Sorting address data is easier with field-based programs than with the free-form programs because you can choose which fields to sort on. Both Super QuickDex (through PrintDex II) and Intouch let you sort their files, but to get satisfactory results you must be absolutely consistent about entering data in a standardized format—using the same number of lines for the address, and so on—which does away with the benefits of the free-form approach.



Pop-up Entry Dynodex lets you set up pop-up menus, like this list of cities, to speed data entry and prevent spelling errors.



Open Fields If you don't like the default field names in Address Book Plus, you can easily change any of them.



Fast and Simple Super QuickDex keeps it all together in a single field. Free-form contact managers let you enter information however you want—but you may regret it later when you try to print formatted documents.

■ **Dialing** All six programs can dial stored telephone numbers through the Macintosh speaker or through a modem, neither of which is convenient. Dynodex and TouchBase can also send dialing commands to other applications via Apple events. Overall, Super QuickDex is the most flexible for making long-distance calls that require dialing special access numbers and codes.

■ **Printing** All the contact managers let you print subsets of your contacts in a variety of formats, but some programs are more flexible than others. Because contact data can be used in so many ways, you'll want control over what fields to print and where to place them, as well as what fonts and sizes to use.

Of the four field-based programs, I prefer TouchBase's and Now Contact's approach to printing. When you go to print, TouchBase asks you to select an output format from a set of icons that includes mailing labels, envelopes, fax cover sheets, and paper address books. Next, you're presented with a scrolling list of templates for the output format you've chosen. For example, if you're printing envelopes, TouchBase displays a list of all of its envelope layouts. It also lets you choose a format for the address and, if applicable, for the return address. In addition, TouchBase lets you customize output and address formats to suit your needs. Now Contact's printing functions are similar.

Both free-form programs also let you print addresses, but they limit your options. With Intouch, for example, there is no easy way to omit the company name from the printed address. Super QuickDex is the least convenient: to print an envelope you use another DA called QuickElope, and for anything more complex you must use the PrintDex II utility program.

■ **Performance** To gauge the address book programs' speed and storage efficiency, I imported 2000 unique records into each program. Super QuickDex's file was the most economical in disk usage at 161K, with Dynodex, Intouch, and Now Contact not far behind, and TouchBase a distant last, at 1.5MB. Super QuickDex and Intouch were the fastest at opening files by a few seconds—3 seconds and 4 seconds, respectively, compared with 11 seconds for Address Book Plus (for more details, see "Contact Managers: Quick Facts"). All were fast at searching for individual records.

The Last Word

The ideal address book would adapt to my habits and preferences instead of compelling me to change the way I work. For example, it would learn how I format addresses and telephone numbers by watching how I type them. I'd also like competing products to share contact, schedule, and other personal information without cumbersome import/export procedures. And seamless connectivity to hand-held devices like Apple's Newton PDA is essential if we ever hope to do away with paper address books entirely.

None of the products I reviewed are sufficiently advanced or offer a strong enough mix of features to merit an Editors' Choice award. Even so, an electronic contact manager is much better than a messy handwritten notebook. If you don't need to combine schedule and contact information, any of the products I've covered will do the job, although the current version of Super QuickDex is too primitive for my needs. If you're already using calendar software, I suggest using the companion address book program if one is available. **m**

FRANKLIN N. TESSLER is a *Macworld* contributing editor and a radiologist. He moved from California to the East Coast last year and is still updating his address book.

NEW ADDRESSES

Three contact managers were not shipping or were in the middle of being revised as I was writing this article. These capsule summaries are based on testing the beta versions and interviewing the vendors.

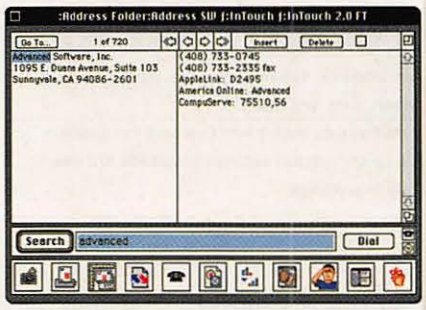
MacPhonebook 4.0 MacPhonebook (Synex, 718/499-6293) is a field-oriented address book. Version 4.0 will provide control of font and font size in all fields, more printing options, a 32K notes field, more categories, and more import and export formats. MacPhonebook's interface is also being redesigned, but judging from the beta copy that I examined, the new interface is not promising.

Souvenir Souvenir (ComposeTel, 415/327-0744) is a recent import from France that has sold well in Europe for several years. Souvenir is an extension, so it is always in RAM. Files can be shared over a network. Souvenir can copy multiple address fields to the Clipboard at once and print them as a label; it can also address documents created in Faxstf, Microsoft Mail, and other formats.

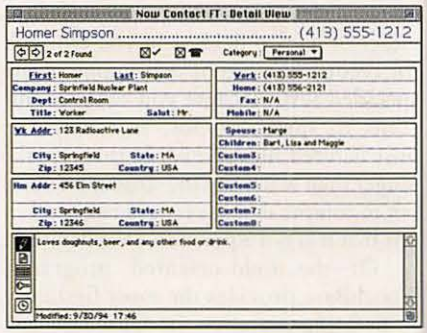
TouchBase Pro 4.0 The TouchBase upgrade (Aldus, 619/558-6000) promises a revamped interface and better integration with the DateBook Pro scheduler—for example, you'll be able to drag contacts from TouchBase into a calendar to schedule a meeting with those contacts. Version 4 lets you search for contact information without launching the program. Aldus claims that the new version of TouchBase will be much faster and will create much smaller files.



Easy Lists In TouchBase you can specify which fields to display in the list view by selecting their names from pop-up menus at the top of each column.



Free-form Data Intouch tries to straddle the fence between the formless void and structured data. If you diligently enter the telephone, address, and other information in the correct format, you'll be able to print labels and dial telephone numbers.



Fine Details Now Contact's flexible detail view lets you set how many addresses, telephone numbers, and other kinds of data are displayed.



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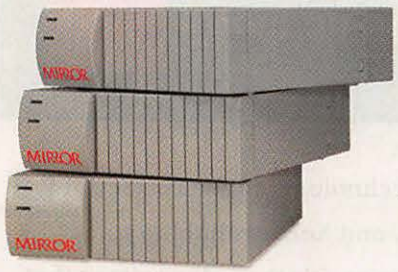
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20" Color	$1399
20" Trinitron	$1999
21" Color	$1999
Tornado Graphics Card	$699
ChargeCard Accelerator	$599
Tornado & ChargeCard	$1199
600 dpi Color Scanner	$799
800 dpi Color Scanner	$999
1200 dpi Color Scanner	$1499
Coolscan Slide Scanner	$1999

Storage	Int	Ext
170 MB (Q)	$199	$249
340 MB (Q)	$329	$389
540 MB (Q)	$439	$499
1.1 GB (I)	$679	$739
1.9 GB (S) 'Cuda	$1409	$1469
2.1 GB (I)	$1339	$1399
2.4 GB (S)	$1499	$1559
2.4 GB (S) 'Cuda	$1739	$1799
3.4 GB (S)	$2149	$2249
128 Optical	n/a	$799
230 Optical	n/a	$979
256 Optical	n/a	$899
1.3 GB Optical	n/a	$2399
44MB SyQuest	n/a	$229
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105MB SyQuest	n/a	$399
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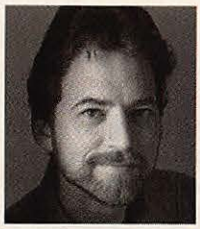
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Circle 58 on reader service card



BY LON POOLE

Quick Tips

Tips, Tricks, and Shortcuts

IN WORDPERFECT 2.1 AND 3.0, AS IN MOST word processors, formatting changes such as line spacing, tab settings, and margins take effect at the beginning of the paragraph containing the insertion point (or text selection). Sometimes you want to have changes not affect text before the insertion point, even though that text is in the same paragraph. Mark S. Eckert of Waipahu, Hawaii, discovered an undocumented feature of WordPerfect that lets you accomplish this with a custom macro, which you create as follows:

1. Close all open WordPerfect windows and choose Record from the Macro submenu of WordPerfect's Tools menu, bringing up the New Macro dialog box. Enter a name for the macro such as **Formatting(Character)** in the space provided, make sure the option Show Macro in Menu is checked, and click the New button. A window appears in which you can edit the macro.

2. In the macro-editing window, type **Formatting(Character)** and press return. WordPerfect then changes the word *Formatting* to bold because it's a macro command, while the plain text in parentheses is a parameter of the command.

3. Click the Save button, and close the macro-editing window.

The macro you just created now appears in the Macro submenu of the Tools menu. Choosing the macro makes formatting changes take effect from the insertion point to the end of the section or document. To reset ordinary paragraph formatting, choose Preferences (Edit menu), click the Environment button, and choose Paragraph or Single Paragraph from the Format menu in the Environment dialog box. You may want to record these actions as a macro for setting ordinary paragraph formatting. (For a description of the Paragraph and Single Paragraph options, use balloon help.)

Easy Rebuilding Update

Like Martha Fullmer of Waupaca, Wisconsin, you may get a message saying the name Desktop is already taken when you try to rebuild the desktop of your hard drive by creating a folder named Desktop at the root level of the hard drive (as a tip last May suggested). This means your hard drive contains an invisible file named Desktop, in which the System 6 Finder keeps desktop information (System 7 keeps desktop information for hard drives



in two other invisible files, Desktop DB and Desktop DF). The invisible Desktop file exists on every floppy disk and on any hard drive that has ever been used with System 6 and has not been initialized since then. System 7 also seems to create the invisible Desktop file on hard drives sometimes, although I can't prove this.

You can work around the invisible Desktop file by making it visible with a utility program, or by replacing the invisible file with a visible document saved by Microsoft Word or other everyday programs. Use the Save As command to save any document with the name Desktop at the root level of the hard drive. Leaving a replacement Desktop file visible in the disk window (or discarding it and creating a Folder named Desktop) causes the Finder to automatically rebuild the hard drive's desktop when you restart the Mac.

Internet Gateways

Q. How can I send E-mail from CompuServe to my friend on the Internet?

Mark Chmarny
via CompuServe

A. The table "E-Mail Interchange" lists the address formats to use for several commercial online services, including CompuServe. Be aware that some services charge for handling Internet E-mail. For example, CompuServe bills you $0.15 for the first 7500 characters and $0.05 for each additional 2500 characters in each Internet message you send or receive, but the standard pricing plan includes a $9-per-month E-mail credit. America Online and GEnie don't charge extra for Internet E-mail. You can also use the Internet as a conduit through which to exchange E-mail between different online services.

Green Computing

Q. Our computer lab has a variety of Macs, ranging from an SE to a 660AV. All have screen savers. Is it safe to leave them running 24 hours a day? How much power do they consume?

Shehan B. Dissanayake
Chicago, Illinois

continues

DON BAKER

E-Mail Interchange

	To Internet	From Internet
America Online	tarzan@jungle.com	jane@aol.com
AppleLink	tarzan@jungle.com@internet#	jane@applelink.com
AT&T Mail	tarzan@jungle.com	<jane>@attmail.com
BIX	tarzan@jungle.com	MAIL: to jane@bix.com
CompuServe	>INTERNET:tarzan@jungle.com	70370.702@compuserve.com
Delphi	tarzan@jungle.com	jane@delphi.com
eWorld	tarzan@jungle.com	jane@eworld.com
GEnie	tarzan@jungle.com@inet#	jane@genie.geis.com
MCI Mail	tarzan@jungle.com	1234567@mcimail.com
Newton Mail	tarzan@jungle.com	jane@online@apple.com

If Tarzan were on the Internet and Jane had accounts on several commercial online services, they could exchange E-mail using the addresses shown here. Tarzan's Internet address is tarzan@jungle.com. Jane's address is jane on all services except CompuServe, where it is 70370,702 (you must replace the comma with a period when sending mail to CompuServe from the Internet), and MCI Mail, where it is 1234567. The Internet can also be an E-mail conduit between commercial services. For example, if Cheetah had an account on America Online, Jane could send her mail at >INTERNET:cheetah.aol.com.

A Switching off your system at night and starting it up again the next day is a hassle but doesn't materially affect the system's useful life. Leaving it on may very slightly benefit some electronic components but probably makes the picture tube and hard drive wear out a bit faster (even with a screen saver).

Power consumption ranges from a few watts for a PowerBook to a couple hundred watts for a Quadra 950 with a large color monitor. Turning off your computer (or other electrical device) nights and weekends cuts its power consumption by about 70 percent per year. You save money on electrical bills ($92 a year at $0.10 per kilowatt-hour for a 150w system) and reduce the air pollution that's a by-product of generating electricity. To learn more about these and other benefits of reducing computer power consumption, order document E93-20, "What an Energy Efficient Computer Can Do," for $4 from the Rocky Mountain Institute (303/927-3851).

A computer and monitor that bear the logo of the EPA's Energy Star program automatically reduce their power consumption to 60w or less (30w for the computer and 30w for the CRT display) when they're inactive. (Apple and other companies make Energy Star computers, monitors, and printers.) For example, a 150w Energy Star computer and monitor that are inactive half of each 10-hour weekday and are on all the time would cost $67 less per year to operate (at $0.10 per kwh) than a conventional system. Turning off the Energy Star system nights and weekends would save another $37 per year. To get more information about the Energy Star program, call the EPA hotline (202/233-9114) or fax request line (202/233-9659).

Illustrator Clip Library

TIP Adobe Illustrator versions 3.0 and later have a little-known built-in library in which you can store art from an Illustrator drawing. To store a partial or complete illustration in the library, simply create a bounding rectangle around the artwork and send the rectangle to the back. Next select the rectangle and the artwork it encloses, and choose Pattern from the Object menu to bring up the Pattern dialog box. Click the New button and give the artwork a name. To keep your library items together, give them all names that start with **lib.** or another prefix you like. Click OK to store the artwork and dismiss the dialog box. After defining the "pattern," you can de-

continues

COUNTING SIGNS

If you wish to count the number of positive, negative, or zero values in a range of spreadsheet cells, Rob Griffiths of Beaverton, Oregon, has a method you may find more intuitive than the one in May's *Quick Tips*.

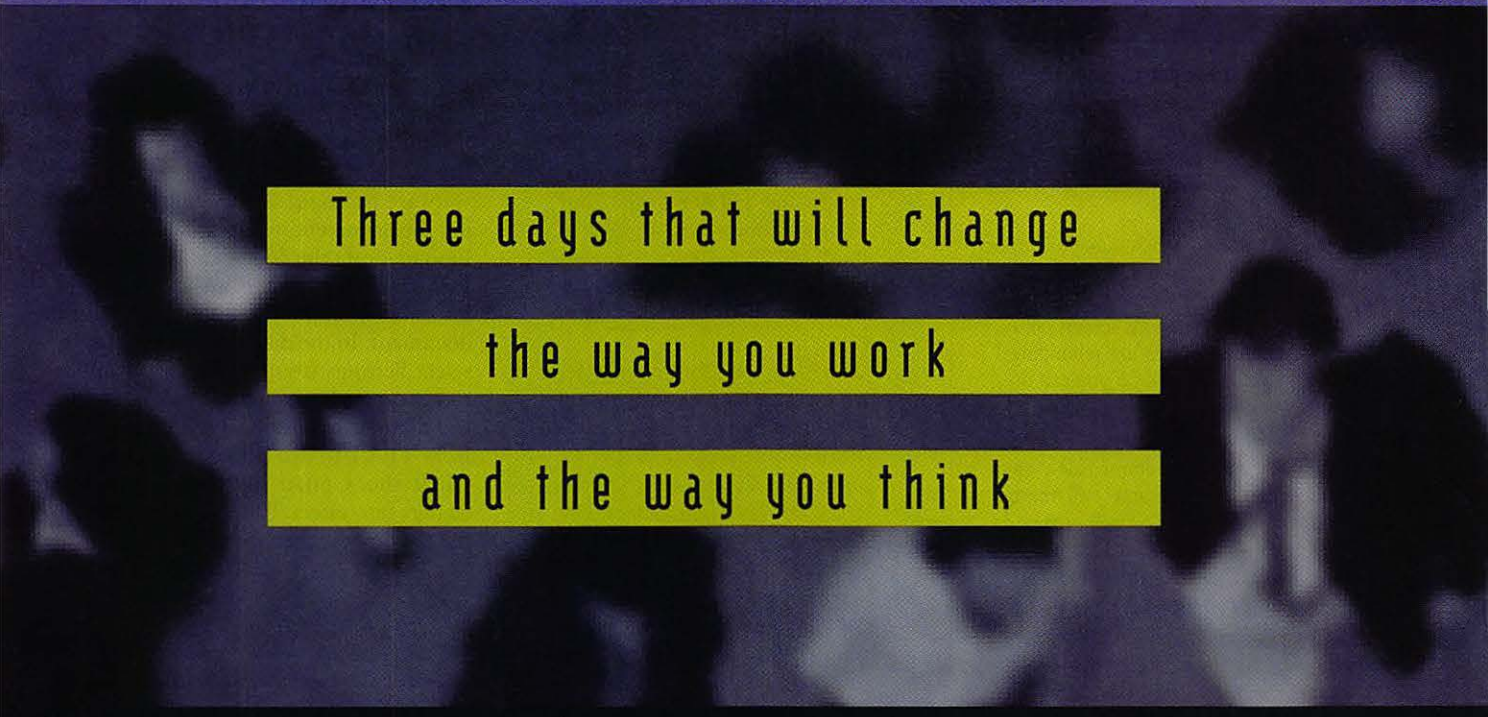
The basic method uses the SIGN function in conjunction with logical expressions, as shown in the top spreadsheet. The array formulas in cells C11:C13 count the number of positive, zero, and negative values in cells B3:C9. The logical expressions determine whether a cell is positive (>0), zero (=0), or negative (<0). The SIGN function has a value of 1 if the logical expression is true, or 0 if false. The SUM function adds the 1s and 0s for the final tally. It's fairly obvious you must enter each formula in C11:C13 as an array formula—for example, by pressing ⌘-enter after you type the formula.

The bottom spreadsheet extends the basic method to calculate a quarterly subtotal of monthly sales that occurred in one of three regions. The range of cells used in the array formula at the bottom of the spreadsheet determines which months the subtotal includes. The array formula multiplies the value of a cell in that range by 1 if the cell contains data for the desired sales region; it multiplies by 0 if the cell does not contain data for that region. The value of a cell multiplied by 1 gets included in the subtotal calculated by the SUM function, and the value of a cell multiplied by 0 gets excluded. A logical expression determines (by checking the cell's row heading in column C) whether a cell relates to the desired region, and a SIGN function has a value of 1 if the logical expression is true, or 0 if false. The vertical range in the SUM and SIGN formulas must be identical (rows 5 to 12 here) or you get a #N/A result.

	A	B	C	D	E
1					
2					
3		1	1		
4		2	5		
5		-2	0		
6		4	2		
7		-2	-5		
8		-3	4		
9		0	1		
10					
11		Positives:	8	{=SUM(SIGN(B3:C9>0))}	
12		Zeros:	2	{=SUM(SIGN(B3:C9=0))}	
13		Negatives:	4	{=SUM(SIGN(B3:C9<0))}	
14					

	A	B	C	D	E	F	G	H	I	J
1										
2										
3					Jul	Aug	Sep	Oct	Nov	Dec
4		Widgets								
5			North		5	7	2	1	1	3
6			Central		10	12	15	18	19	22
7			South		15	11	17	18	20	25
8										
9		Flanges								
10			North		13	20	25	30	33	31
11			Central		25	17	13	15	12	18
12			South		11	18	26	31	22	14
13										
14		Widgets + Flanges								
15			North		18	27	27	31	34	34
16			Central		35	29	28	33	31	40
17			South		26	29	43	49	42	39
18										
19		How many total sales occurred in Central during Oct/Nov/Dec?								
20		104	{=SUM((H5:J12)*SIGN(C5:C12="Central"))}							
21										

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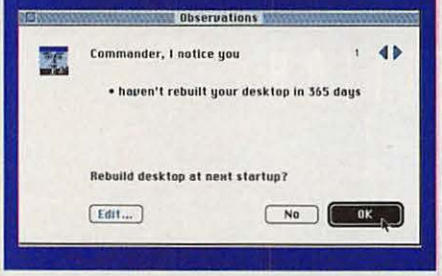
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The complete picture.

Apple made it easy to use. We make it easy to do.



In fact, we'll do it for you. Introducing Open Sesame!, the world's first intelligent software assistant for the Macintosh. Open Sesame! observes how you work, *learns* your repetitive patterns, and then offers to do them for you. Automatically.

With a single click, Open Sesame! will open and close related sets of folders, documents and applications, create and manage multiple Apple Menu and Desktop items folders, and perform routine maintenance, like rebuilding your desktop...automatically. So you can do more with fewer clicks.

For example, suppose that every time you start up your Macintosh you immediately open your mail program. Open Sesame! will observe this and offer to do it for you. It will even find more efficient ways for you to use System 7.0, like making aliases and stationery automatically.

Here's what the critics say: "One that knocks my socks off is called Open Sesame! ...the simple fact is that Open Sesame! works smarter for me. It might just herald a new wave in mac smartware. ...The more you use it the better it gets." The Mac Manager, *MacWEEK*

"Macintosh users who like the flexibility of System 7 but tire of "tweaking" their desktop and Apple menu items will appreciate Charles River Analytics Inc.'s Open Sesame!" *INFOWORLD*

Open Sesame! is available at these quality resellers: MacWarehouse 800-255-6227, EGGHEAD 800-EGGHEAD, The Mac Zone 800-248-0800, ComputerWare 800-326-0092.

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lete the original artwork from its document—but don't delete the document. Your library items, being custom patterns, are saved with the document they came from. If you delete the document (without first embedding your patterns into another document as described in the Illustrator 3.0 manual, or loading them into another document with the Import Styles command as described in the 5.0 manual), you will lose your patterns.

To use your stored artwork, choose Pattern from the Object menu, click the artwork's name, and click the Paste button. All that's left for you to do is delete the bounding rectangle.

To take full advantage of your new library, use the Import Styles command to save your patterns as a custom start-up file (as described in the Illustrator manual). This makes your library artwork part of every new Illustrator document. You can also use the Import Style command to load your library artwork from another Illustrator document.

Hanaan Rosenthal
Providence, Rhode Island

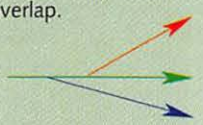
PAGEMAKER ARROWS

You can make a versatile arrow quickly and easily in PageMaker 5.0 from Zapf Dingbats (or any other font with neat arrowheads) and the en-dash character (option-hyphen). Here is the procedure, from William Pitts of Jackson, Mississippi.

1. Type several en dashes in a font already used in the document, and add one of the Zapf Dingbat arrowheads, aligning all flush left to facilitate changing the length of the arrow later.

2. Using the Control palette, choose a point size and leading for the en dashes and the arrowhead—in this case 10 on 12 expanded 200%—and set the track at Very Tight. Select only the line of dashes and adjust the baseline shift to bring up the line so that it will be centered vertically with the arrowhead when printed (as you see here, they may not look vertically centered when displayed).

3. With the line fairly well centered, adjust the kerning between the line and arrowhead until the two overlap.



4. The result is an arrow that you can rotate as needed. You can lengthen or shorten it by adding or deleting en dashes or by dragging the corner handles of the window shade. You can even change the color with the Color palette as you would with any piece of type.

Making a TeachText Read Me

TIP I have discovered a way to use Fast Find from Norton Utilities 2.0 to make TeachText documents that can't be edited and have an icon that looks like the front page of the newspaper, similar to the Read Me files that come with software packages. After typing and saving the document in TeachText, use Fast Find to locate the document. Choose Get Info from the Fast Find menu to get information about the found TeachText document. In the dialog box that appears, select Settings from the list in the upper right corner. Change the Type option (in the Signature section of the dialog box) from TEXT to ttro (all lowercase letters). Click the Update button to put the change into effect. Click Done to dismiss the dialog box, then quit Fast Find.

Donald Neyrinck
Waukegan, Illinois

You can actually create the document in any word processor that can save in text-only format. If you do, you must make one more change in the Fast Find Get Info dialog box before clicking the Update button: change the Creator option to ttxt (all lowercase letters). In fact, you don't even have to use Fast Find. You can use any program that can change a file's Type and Creator settings, such as Apple's ResEdit or the shareware program FileTyper.—L.P. **m**

We pay from $25 to $100 for tips published here. Send questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to *Quick Tips,* Lon Poole, at the address listed in *How to Contact Macworld* at the front of the magazine (include your address and phone number). All published submissions become the property of *Macworld.* Due to the high volume of mail received, we're unable to provide personal responses.

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld System 7.5 Bible* (IDG Books Worldwide, 1994).

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MACWORLD Expo/Toronto: October 18-20, 1994

The Macintosh is taking the Canadian market by storm! Isn't it time you became a part of the excitement? Join us at MACWORLD Expo/Toronto as we take over 130,000 square feet of exhibit space at the Metro Toronto Convention Centre. When you come to MACWORLD Expo/Toronto, you'll see uses and applications for the Macintosh in a variety of areas including: Networking, Spreadsheet Analysis, Databases, Education, Research, Word Processing, Accounting, Law, CAD/CAM, Forecasting, Design, Publishing, Illustration, Animation, Music, Programming, Entertainment and Multimedia. So plan to be in Toronto from October 18-20, and experience the Macintosh at its absolute best!

Pre-Registration Savings!

Now is the time to pre-register for MACWORLD Expo/Toronto. Return the following pre-registration form with your payment by September 7 and save $15 on all conference sessions and exhibits ($75 now vs. $90 cash only at the door). An Exhibits-only admission saves you $10 ($15 now vs. $25 cash only at the door). And since your time is as valuable as your money, we'll send your admission badge early when you pre-register. Avoid the registration crowds and get a jump start on the exhibition!

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Attending MACWORLD Expo/Toronto is easy every step of the way! We offer a complete package of discounts and amenities that offer maximum flexibility and convenience.

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Substantial savings are available when you fly Air Canada to MACWORLD Expo. As the official airline of MACWORLD Expo/Toronto, Air Canada is again pleased to offer discounts of 15% to 50% on certain fares.** Dial 1-800-361-7585 and ask for Event #CV 947390. (**Subject to applicable fare restrictions.)

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If you're planning to rent a car, you'll get a great rate from Hertz. Call 1-800-654-2240, ask for Convention #13628 and tell the reservations operator you're attending MACWORLD Expo.

Services for the Physically Challenged

We're committed to ensuring our physically challenged attendees receive all the services they need to make their show visit enjoyable. Call us at 800-265-3585 for details.

Pre-recorded Information

Any questions? Listen to pre-recorded information about MACWORLD Expo/Toronto 24-hours, seven days a week. Call the MACWORLD Expo Information Hotline at 905-566-5733.

Hotel Accommodations

Participating hotels in the Toronto area are offering MACWORLD Expo discounts. To receive the preferred rate, call one of the hotels listed on the next page and mention you'll be attending MACWORLD Expo. There are a limited number of rooms at the preferred rates and they sell-out quickly. Make your reservations now for the best selections. Prices reflect single and double occupancy. If you are reserving 10 or more rooms, you must supply the hotel with a rooming list and a non-refundable deposit for the first night, no later than September 5, 1994.

COMES INTO VIEW

Show Hours
October 18: 12:00 noon - 7:00 p.m.
October 19: 10:00 a.m. - 5:00 p.m.
October 20: 10:00 a.m. - 5:00 p.m.

Conference Hours
October 18: 10:30 a.m. - 7:00 p.m.
October 19: 11:00 a.m. - 5:00 p.m.
October 20: 11:00 a.m. - 5:00 p.m.

MACWORLD EXPOSITION

The Conference Program

a. The PowerPC Stream

Hailed as the next generation of computing, the PowerPC — a hundred times more powerful than the original 128K Macintosh — promises to provide a panorama of solutions and virtually untold computing capability.

- **What Power Macs Deliver**
- **Navigating the PowerPC Upgrade Path**
- **Managing the Power Mac**
- **How Can Developers Take Full Advantage of PowerPC?**

b. The Publishing Stream

A rich collection of intensely useful Macintosh design, prepress, and publishing tips, plus discussions and demonstrations of creative and technological breakthroughs — presented by some of the most respected figures in the industry.

- **Creative Imaging with the Mac**
- **Digital Photography with the Mac**
- **High-End Colour Prepress**
- **Images to Film**
- **Short-Run On-Demand Colour Publishing**
- **A Practical Guide to Trapping**
- **Frequency-Modulated Screening**

c. The Multimedia Stream

Invaluable how-to's, tips, and guidelines on using your Mac to create exceptional-quality productions and presentations with both high-end and low-end multimedia tools.

- **A Beginner's Guide to Publishing a CD-ROM**
- **An Overview of Authoring Tools**
- **Developing Interactive Titles**
- **Multimedia in Training**
- **Non-Linear Editing**
- **Intro to High-End Interactive Multimedia**
- **Intro to Professional Desktop Video**
- **Mastering Animation**

d. The Networking/Connectivity Stream

How users are enhancing communications and maximizing the efficiency of their networks, plus insights on what lies ahead in Macintosh connectivity.

- **The Future of Connectivity**
- **Integrating Macs into Multiplatform Networks**
- **Client/Server in a Multivendor Environment**
- **PowerTalk/PowerShare**
- **The TCP/IP Report**
- **Maximizing the Internet**

e. The Getting-Started Stream

Practical, focused, step-by-step approaches and guidelines for those who need a concentrated course of beginner's how-to's on Mac technologies and techniques.

- **Beginning Mac: Visual Clues**
- **Beginner's Guide to Multimedia**
- **Beginner's Guide to the Internet**
- **Getting Started with Telecommunications**
- **Getting Started with Font Technology**
- **CD-ROM for Users: Beginner's Guide**

f. The Advanced User Stream

Veteran users share their expertise and insider's tricks for getting absolutel the most productivity and power from your Macintosh.

- **Font Management**
- **Power User's Guide to the PowerBook**
- **Customizing Your Mac**
- **Resolving System Conflicts**

g. The Education Stream

An excellent opportunity for educators, administrators, and students to sho and be shown new and classic examples of how the Macintosh positively shines as a teaching tool.

- **The Mac in Math and Science Classes**
- **Maximizing CD-ROM in Education**
- **Multimedia in Education**
- **QuickTime for Teachers**
- **The Internet for Educators**
- **HyperCard in the Classroom**

h. The Programmer/Developer Stream

For in-house developers, veteran independents, and novice Mac techies alike: the hottest breakthroughs and innovations, plus solid advice from reliable sources.

- **OpenDoc**
- **Programming the Newton**
- **AppleScript**

i. The Advanced User Stream

Whether you're operating a smaller-size company — or running a business out of your home — or doubling the power of your work environment with remote office in your home — your needs are different than organizations with hundreds or thousands of employees!

- **How to Set Up a Home Office**
- **Starting Your Own Successful Desktop Publishing Business**
- **Making the Most of PIMS**

j. The Special Interest Group Stream

Sessions for "birds of a feather" looking to compare Mac notes with others a similar setting — to solve special problems, to see how colleagues across the continent are getting more mileage out of the Mac, and to develop an invaluable "user network."

- **The User Group Forum**
- **The Mac in Government**
- **The Mac in Science/Technology**
- **The Mac in IS**
- **The Mac in the Law Office**

k. The Application Workshop Stream

Intensive training sessions on some of the most popular Macintosh applications.

- **Microsoft Word**
- **QuickTime**
- **HyperCard**
- **Aldus PageMaker**
- **Advanced Macintosh**
- **Microsoft Excel**
- **Claris FileMaker Pro**
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Special Added Attractions at MACWORLD Expo/Toronto:

- **MacIS/Pacific Resource Centre**
- **MacSciTech Resource Centre**
- **UGWUMP: User Group Welcoming Unwinding Meeting Place**

MACWORLD EXPOSITION



Registration Form

Pre-register by September 7 and Save $10 to $15

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Hotel	Address	Rate	Phone
Crowne Plaza Toronto Centre	225 Front Street West, Toronto, Ontario M5V 2X3	$120	(416) 597-1400
Holiday Inn on King	370 King Street West, Toronto, Ontario M5V 1J9	$109	(416) 599-4000
Royal York	100 Front Street West, Toronto, Ontario M5J 1E3	$119	(416) 368-2511
Sheraton Centre Toronto	123 Queen Street West, Toronto, Ontario M5H 2M9	$118	(416) 361-1000
Toronto Hilton	145 Richmond Street West, Toronto, Ontario M5H 2L2	$110	(416) 869-3456

Completing the Pre-Registration Form. Please choose your package and fill out this form completely. The pre-registration deadline is September 7; registration forms received after September 7 will be returned unprocessed. Incomplete forms will be returned. Use one form per person: make photocopies for additional people. (**Purchase orders cannot be accepted. All registration fees are non-refundable.**) Payment is by credit card or check. Please do not staple check to form.
Send completed forms to:

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Mississauga, Ontario L4Z 1Y5

Canadian and U.S. Attendees. All Canadian and U.S. attendee badges will be mailed on or about September 30. Be sure to check the box indicating where your badge should be sent.

International Attendees. All non-Canadian and non-U.S. badges will be held for pick-up at the International Pre-registration Desk beginning October 18 at 8:00 a.m.

Please register me for:

❑ **Package One $75.** Conference sessions* and exhibits. Pre-register by September 7 ($90 cash only at the door). Includes GST $4.91

❑ **Package Two $15.** Admission to exhibits only. Pre-register by September 7 ($25 cash only at the door). Includes GST .98¢

Please send my registration badge and further information to:

Please check one: ❑ Home Address ❑ Company Address

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3. ☐ Art/Design/Creative Services
4. ☐ Arts & Entertainment
5. ☐ Communications/Printing/Publishing
6. ☐ Computer Reseller/VAR/VAD
7. ☐ Consulting
8. ☐ Corporate/General Management
9. ☐ Distributor/Dealer/Retailer/Service
10. ☐ Engineering/R&D
11. ☐ Government/Military
12. ☐ Health/Medical Services
13. ☐ College/University
14. ☐ Elementary/High School
15. ☐ Legal Services
16. ☐ Manufacturer (Computer Industry)
17. ☐ Manufacturer (Non-computer Industry)
18. ☐ Marketing/Sales/PR/ Communications
19. ☐ Other
20. ☐ Does Not Apply

YOUR TITLE
(choose only one)

21. ☐ CEO/President/VP
22. ☐ Controller/Treasurer/Accountant
23. ☐ DP/MIS Manager
24. ☐ Network Manager
25. ☐ Programmer/Analyst
26. ☐ Engineer/Scientist/R&D
27. ☐ Manager/Department Head
28. ☐ Professional (Lawyer, Doctor, etc.)
29. ☐ Consultant
30. ☐ Marketing/Sales
31. ☐ Educator
32. ☐ Art Director/Graphics
33. ☐ Editor/Writer
34. ☐ Student
35. ☐ Other
36. ☐ Does Not Apply

SIZE OF YOUR ORGANIZATION
Number of employees national & international (choose only one)

37. ☐ Under 50
38. ☐ 50 - 99
39. ☐ 100 - 499
40. ☐ 500 - 999
41. ☐ 1,000 & over
42. ☐ Does Not Apply

WHICH PERSONAL COMPUTER(S) DO YOU OWN/USE?
(choose all that apply)

43. ☐ Macintosh Plus/SE/SE30
44. ☐ Macintosh Classic Series/LC Series
45. ☐ Macintosh Powerbook Series/Duo Series
46. ☐ Macintosh II Series
47. ☐ Macintosh Performa Series
48. ☐ Macintosh Centris Series
49. ☐ Macintosh Quadra Series
50. ☐ Macintosh Workgroup Series
51. ☐ IBM PC or compatible
52. ☐ Other
53. ☐ None

DO YOU RECOMMEND, BUY, OR APPROVE MICROCOMPUTER SOFTWARE AND/OR PERIPHERALS?

54. ☐ Yes
55. ☐ No

IF YES, PLEASE INDICATE FOR HOW MANY MACINTOSH COMPUTERS YOU HAVE THIS INVOLVEMENT.

56. ☐ 1 - 10
57. ☐ 11 - 25
58. ☐ 26 - 50
59. ☐ 51 - 100
60. ☐ 101 - 500
61. ☐ 501 +

*MACWORLD Expo conference sessions are on a first-come, first-served basis with no guaranteed seating and are subject to change without notice. All registration fees are nonrefundable.
Send completed form, with check, money order or credit card information to: MACWORLD Expo/Toronto, 4257 Sherwoodtowne Blvd., Mississauga, Ontario L4Z 1Y5, Canada

EDITED BY ELIZABETH DOUGHERTY

Networks

THE LATEST IN CONNECTIVITY AND COMMUNICATIONS

ATM LANs Will Run Lightning-Fast

BY NOW, MOST SPEED FREAKS RUNning bandwidth-hungry applications such as full-motion video, CD-quality audio, and high-speed data communications have heard about asynchronous transfer mode (ATM), an emerging technology designed to support simultaneous transfer of data, audio, and video at speeds from 51 Mbps to 1.2 Gbps.

If you're hoping to connect your Macs into an ATM-based LAN, you'll be glad to hear that Macs are about to join Sun and Silicon Graphics workstations and Microchannel- and EISA-bus PCs as computers that can link up via ATM.

Fore Systems, one of the pioneers of ATM LAN technology, is developing NuBus adapter cards that can be used along with the company's ForeRunner ASX-100 ATM switch to set up ATM workgroup LANs. More than a dozen vendors have announced ATM LAN switching equipment, but Fore is the only one so far to develop a NuBus adapter.

Two versions of Fore's NuBus card should be available in September. The NBA-200/125 NuBus adapter ($1700) will deliver 100 Mbps to a user's desktop; the NBA-200/OC3 NuBus adapter ($1900) promises a speed of 155 Mbps. Both will support TCP/IP protocols, so MacTCP applications should operate without modification over the network, according to Fore. The NBA-200/125 and NBA-200/OC3 can be used with either multimode fiber or Category 5 unshielded twisted-pair cabling.

Several companies, including Fore, Newbridge Networks, and Efficient Networks, have announced plans to develop PCI-bus ATM adapter cards for the next generation of Power Macs, which Apple is expected to start shipping in 1995. Fore Systems, 412/772-6600; Newbridge Networks, 703/834-3600; Efficient Networks, 214/991-3884.—MARTHA STRIZICH



HANK OSUNA

Security Card Locks Networks

SHIVA CORPORATION HAS INCORPOrated Security Dynamics' network security software into its LanRover line of remote access servers. The security system, which prevents unauthorized users from accessing a network, has two parts: ACE/Server software that resides on the server, and the SecurID card and personal ID number (PIN) issued to each user.

The SecurID card, a credit card–size device, emits a continually changing code that the ACE/Server software recognizes, and then the user enters the PIN. If all the numbers check out, open sesame; if not, access is denied. Products already using the system include Apple's ARA 2.0, Xylogics' Annex servers, Cayman Systems' GatorLink ARA server, and Telebit Corporation's NetBlazer line. Shiva Corporation, 617/270-8300; Security Dynamics, 617/547-7820.—NANCY E. DUNN

AT&T Links LANs

A PARTNERSHIP BETWEEN AT&T AND Novell promises to yield a new connection service in the first half of 1995 that will make it easier to exchange messages and files with those beyond your private data network. Through a single connection, the AT&T NetWare Connect Service will give its users access to existing services, such as AT&T EasyLink and the Internet, plus new applications, including information retrieval and elec-

tronic commerce. The first new application will be AT&T Network Notes, a multimedia service based on Lotus Development Corporation's Lotus Notes; it will allow users at different locations and enterprises to collaborate electronically.

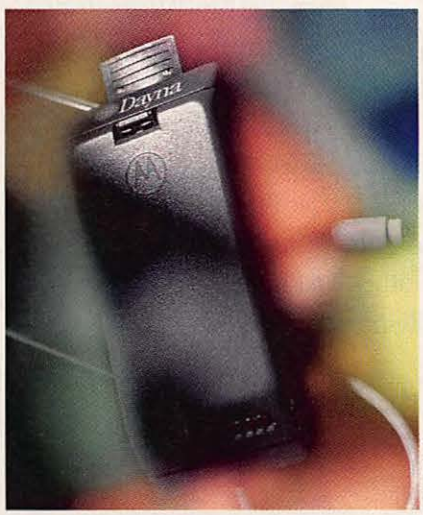
Novell NetWare's directory services and security features will serve as the foundation for AT&T NetWare Connect Services. Access will be available over dedicated lines through the AT&T InterSpan Frame Relay Service, and dial-up access will be available via AT&T's InterSpan Information Access Service. NetWare for Macintosh users will need to run IPX or TCP/IP protocol stacks. Further details on the service, such as pricing and support, have not yet been released. AT&T, 800/204-2764; Novell, 800/638-9273.—MARTHA STRIZICH

Riding the Waves, Wireless

STANDARDS FOR WIRELESS LANS ARE still at least a year away, but wireless connectivity options continue to increase.

The latest entry is born from an alliance between Xircom and Dayna Communications. Dayna's wireless adapter ($600 to $700), based on Xircom's Netwave technology, plugs into the serial port of any PowerBook, or into the LocalTalk port of a Newton MessagePad or Apple LaserWriter.

Coworkers can equip their portables with Netwave adapters and set up their own ad hoc wireless networks at speeds up to 256 Kbps; or they can tie in to the resources of a wired Ethernet LAN through wireless bridges called *access points* ($1500 to $1700 each).



TOM GIBSON

Dayna's wireless network adapter is about the size of a flip phone.

The new Netwave adapter uses Xircom's spread-spectrum radio technology to operate in the unlicensed 2.4-gigahertz frequency band. The device is powered by standard cellular phone batteries.

Adapters and access points are due in October from both companies. PCMCIA Netwave adapters for the PowerBook 500 series are scheduled to ship this fall. Xircom also offers Netwave adapters for DOS-based PCs. Dayna Communications, 801/269-7200; Xircom, 818/878-7600.—MARTHA STRIZICH

Asanté Hits the Road

WHETHER YOU'VE GOT A POWERBook or a Duo, Asanté Technologies can connect you to an Ethernet network when you're on the road. The company's Micro EN/SC SCSI-to-Ethernet adapter draws its power from the PowerBook's ADB port via a pass-through connector. No SCSI cables are needed because an HDI-30 connector is built into the box, which measures 3 inches by 2½ inches by 1 inch. The Micro EN/SC lists for $369 with ports for both 10BaseT and thin Ethernet. A 10BaseT-only version, the Micro EN/SC-10T, is also available for $299.

The NetDock ($259) plugs into a PowerBook Duo's docking connector and provides a 10BaseT connector and an ADB port. Both the NetDock and the Micro EN/SC should be available by the time you read this. Asanté, 408/435-8388.—CAMERON CROTTY

Farallon Shrinks PhoneNet, Expands Ethernet

ETHERNET IS THE NETWORK OF the nineties, but for quick, easy, and cheap, it's still tough to beat LocalTalk. Playing to both markets, Farallon Computing is introducing a compact version of its PhoneNet StarConnector, along with the Starlet line of unmanaged 10BaseT hubs.

The preterminated PhoneNet Pocket Connector, smaller than a keychain, plugs into the 8-pin serial port found on any LocalTalk device, including PowerBooks, Newton MessagePads, and peripherals. Users get a single jack into which they plug a LocalTalk network cable. The PhoneNet Starter Kit ($24.99) includes two Pocket Connectors and a 7-foot PhoneNet cable—all the hardware you need to set up a two-node LocalTalk network. A single Pocket Connector goes for $17.99.

The 10BaseT Starlet hubs come in 4-, 8-, and 16-port sizes and feature both RJ-45 repeater ports and thin Ethernet ports for connecting the hubs or linking them to a larger network. Available in July, the hubs will have suggested retail prices of $219 for 4 ports, $299 for 8 ports, and $699 for 16 ports. In related news, the company also announced the Ether 10-T StarController/557T, a managed 10BaseT hub that features 12 RJ-45 ports. The StarController/557T ships with StarCommand management software and lists for $1399. Farallon, 510/814-5100.—CAMERON CROTTY

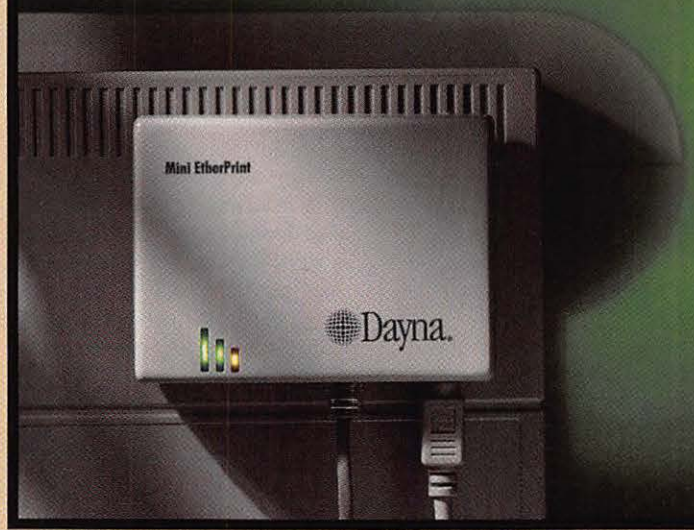
IN BRIEF

■ **Wireless Network Service Debuts** Metricom is harnessing its Micro Cellular Data Network wireless-communications technology in a subscriber service, called Ricochet, that is to be announced at the end of June. With a maximum speed of 77 Kbps, the service promises to be considerably faster than other offerings. Metricom offers installation and maintenance of its spread-spectrum radio transceivers as part of the Ricochet service, for a monthly fee that will start at less than $5 per user. Each node on the wireless net requires a $495 Metricom wireless modem. 408/399-8200.

◁ **Power Server Apps** More PowerPC-optimized network applications are on the way, including Meeting Maker XP 1.3, a group-scheduling application from On Technology (from $75 per user; 617/374-1400); KeyServer 3.2, a software-license–management package from Sassafras Software ($30 to $55 per user; 603/643-3351); and TeleFinder Group Edition Host 3.3, a BBS-management package from Spider Island Software ($425; 714/669-9260).

■ **Network Printers** See details on new printers in "600-dpi Printer Wars" in the main *News* section of this issue.

Connecting LocalTalk Devices To Your Ethernet Is A Big Deal.



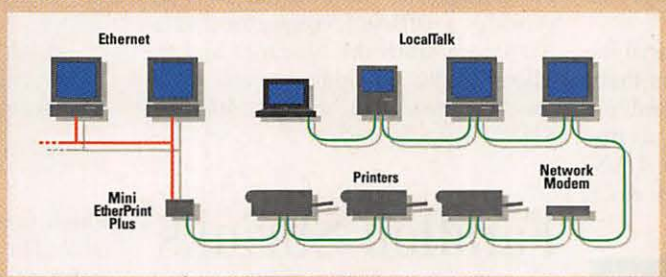
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Circle 161 on reader service card

by Raines Cohen

THESE NETWORK PROGRAMS SAVE TIME, HASSLES, AND SHOE LEATHER

Electronic Software Distribution

Trying to manage software distribution for a network of Macintoshes can be a nightmarish experience. Every software update, virus patch, or bug-fix is multiplied because you have to install these programs on one Mac and then repeat the same laborious process for all the other machines along the network, typically after hours so you don't interfere with everybody's ability to get their job done.



STUART BRADFORD

You juggle extensions, applications, and system software to make sure all the pieces fit together and run properly for all machines. Throw in users' enthusiasm for the latest technology, mixed with a dash of perceived need for the latest features, and you'll stay quite busy preventing the soup from boiling over.

Even an incident as minor as one overeager user upgrading an application before everyone else, can stir things up by automatically updating shared documents to a format other users can't read.

Fortunately, at least nine electronic software-distribution (ESD) applications are available for Mac networks: Apple's Installer 3.4 and 4.0, Sonic Systems' Radar 4.0, Helios USA's netOctopus 1.2, Wave Research's FileWave 2.0, On Technology's StatusMac 3.1, Symantec Corporation's Installer Pro 1.0 and NetDistributor Pro 2.0, and TechWorks' GraceLAN Network Manager 1.1.1 and Update Manager 3.1.1.

These programs let system administrators configure and update software for hundreds of Macs in one fell swoop, without ever leaving the desk—a big help, especially on networks that span multiple, geographically separate offices. But technical limitations, practical concerns, and even cultural issues might make ESD programs inappropriate for your office.

ESD to the Rescue

Most ESD applications consist of a few simple pieces. A profiling component, which runs on the administrator's Mac, communicates with client extensions on the users' machines. The resulting profile tells you what versions of which programs are present on each Mac client on the network. A package generator or script-writing module helps you assemble the files to be distributed (in some cases, compressing the contents) and helps you lay down the rules about who gets what file and when. The program then transmits the update to all client Macs, according to a schedule determined by the administrator; client Macs receive the update via the client system extension.

In instances where you have a roving work force, you may need a store-and-forward updating scheme like that of Helios's netOctopus, which uses the PowerTalk messaging system that is part of the Apple Open Collaboration Environment (AOCE) in System 7 Pro. With this feature, not all Macs have to be on and free at the very instant you send out an update. So you can update wandering PowerBook users, catching them when they pass through the office or when they connect to the network remotely.

For stationary Macs, some distribution programs, such as Radar, let you select target Macs from a list. Others—StatusMac, for example—let you write custom installation scripts that selectively install applications based on attributes of each machine: the Mac type, speed, and memory, plus what programs and versions are already present.

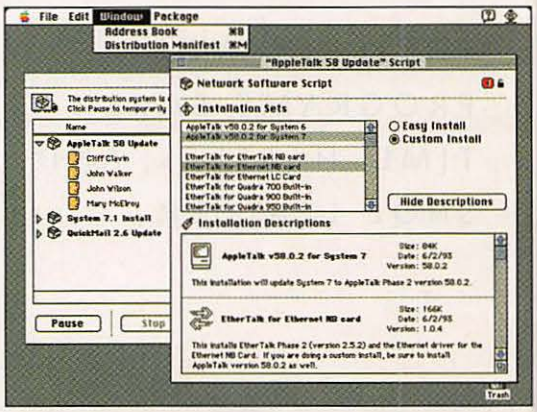
The scripting functions in many ESD applications can help make a network manager's job much easier. Without them, you have to send a single update blindly to all Macs, ignoring the various system configurations present, or you have to tailor the configuration for each Mac and send updates individually. If you know, for instance, that version 3.0 of SuperDuper-Utilities causes crashes under System 7.0.1 on 68030-based Macs running MegaINIT, your script could omit these machines when you install that version officewide.

Some ESD applications support installation scripts written for Apple's own Installer program, so you don't have to create custom scripts to install applications and Apple updates.

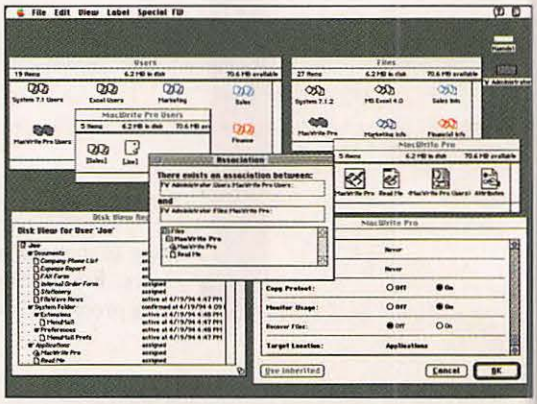
Keep in mind, though, that not all of these programs can update system files, meaning that when you need to do so, it's back to square one: sneaker net and individual-Mac installations. In fact, some ESD product vendors—TechWorks, for one—list their product's inability to update system files as an advantage. Their position is that they're taking some of the worry and hassle out of a network manager's job because remote updating of system software is more likely to interrupt users. On the other hand, Installer Pro, FileWave, Radar, and Apple's Installer can and will let you automate system software updates.

The more flexible ESD programs have proprietary scripting systems that let you adapt installations for your particular site, based on your own knowledge. The most powerful programs support conditional-branching script commands so you can distribute a single package that does different things on different Macs.

Apple's System 7.5 will be an equalizer in this regard (for more on the new System, see the article "System 7.5," in this issue). With its scriptable Finder, 7.5



Symantec's Installer Pro doesn't let managers create custom install scripts, but it can run scripts designed for Apple's Installer, such as System 7.1 and AppleTalk 58.0.2.



Wave Research's FileWave uses a unique graphic interface to give administrators the power of script-driven distribution without the complexity of scripts, using a Finder-like interface to specify who gets what software, when.

Electronic Software-Distribution Packages

Company	Phone	Toll-Free Phone	Product	Distinguishes between Disparate Software Versions	Updates System File	Runs Scripts	Creates Scripts
Apple Computer	408/996-1010	800/767-2775	Installer 3.4 and 4.0	●	●	●	○
Helios USA	408/864-0690	○	netOctopus 1.2	●	○	●	○
On Technology	617/374-1400	○	StatusMac 3.1	●	○	●	●
Sonic Systems	408/736-1900	800/535-0725	Radar 4.0	●	●	●	●
Symantec Corporation	408/253-9600	800/441-7234	Installer Pro 1.0	○	●	●	○
			NetDistributor Pro 2.0	●	○	●	●
TechWorks	512/794-8533	800/688-7466	GraceLAN Network Manager 1.1.1	●	○	○	○
			GraceLAN Update Manager 3.1.1	●	○	○	○
Wave Research	510/704-3900	○	FileWave 2.0	●	●	○	○

● = yes; ○ = no [1] Prices are based on 20- to 25-user packs, except for Radar and GraceLAN Update and Network Manager, which sell units for an unlimited number of users. [2] Product is

will eventually allow most ESD programs to do custom installs using AppleScript scripts instead of their own language. Helios's netOctopus, which already supports AppleScript, may be one of the first to do just this.

Push and Pull: Alternatives and Trade-offs

When you supply users with a serverful of Installer scripts and tell them to upgrade when they choose, you're offering what is known as a pull update, where users run the updating program from their Macs and the installer "pulls" the new software over to each machine at the user's request.

ESD programs, on the other hand, specialize in the push style of update, where you as the administrator broadcast the update, "pushing" it onto the users, in some cases before they're ready for it or at a time when they need the Mac to remain in uninterrupted operation.

The pull approach gives users more flexibility and lets them do some of the work for you. But you can easily end up spending a lot of time supporting users and troubleshooting conflicts between Macs running different versions of programs and operating systems. After your pager beeps with a call about the same problem for the fifth consecutive time, you're likely to become a proponent of the push approach, where you can, in one click, send the update far and wide. And stop it, if necessary, with another click.

Some people on your network may dislike the very idea that the client-side extension installed on their Macs by ESD programs gives you, the administrator, a virtual porthole into their system: you can see what programs they run, tinker with their settings, and restart their Macs without notice (if you so choose).

Sonic Systems' Radar 4.0 gives users some control. They can set passwords in the Radar Responder that limit how much of their hard disk contents you can see. Other programs, including StatusMac, let users refuse system updates they don't want, or postpone them so their system doesn't bog down or restart while they're in the middle of an important task.

Most client-side extensions don't slow down Macs noticeably, except when the extensions are actively installing something. Some, like Wave Research's FileWave, quietly copy files one piece at a time during idle moments, so the distribution process doesn't interfere with foreground applications. In general, if you set updates with your site's schedules in mind, and remind users not to shut down their machines at the end of the day, installations can be fairly unobtrusive.

> CONSIDER IF THE TIME SAVED IS WORTH THE PROGRAMS' COST

If you're running any ESD programs, make absolutely certain that your network is physically secure and that you use the password options on the clients. Otherwise, a virus could hitch a ride on the distribution mechanism and infect your entire network in minutes.

The Last Word

In deciding whether to use electronic software distribution, take into account your corporate culture: if people are used to controlling and configuring their own Macs, the protests you have to endure may not be worth the effort. Consider relying on just a network-assets monitoring system that can look but not touch. If the Macs on the network don't use a standard set of applications, you can use ESD programs, but you'll spend a lot of time creating subgroups to receive particular updates and writing installer scripts.

You also need to consider whether the time you save will be worth the cost of the programs, which can run $235 or more for ten users (see the table, "Electronic Software-Distribution Packages").

If you manage a public-access facility, such as a campus computer lab or a service bureau, the challenge becomes one of regularly restoring all the systems to a clean, original condition. This isn't always easy when users (especially students) often reconfigure systems, install fonts and extensions, inadvertently leave viruses, and otherwise tinker with things.

In such a situation, the ability to simply refresh System Folders from a master copy on one machine is very helpful. Apple's now-discontinued Likewise product gave users that choice. The company says it will add that feature to a future version of At Ease for Workgroups. Of course, updating the System Folders of an entire computer lab at one time may temporarily bog down the network, but it also saves you from worrying about details.

If you have users calling in over relatively slow links, such as Apple Remote Access connections, to receive updates, make sure the ESD program you use compresses data, uses efficient network protocols, and sends only the pieces necessary for an upgrade. Some programs—for example, Symantec's Installer Pro—copy the entire set of files to the client and then run the installer scripts locally.

If your network is large (500 or more users), then the time the ESD package will save you far outweighs the cost. Ditto if you have even a small network with users in different geographic locations, where driving time, gas, traffic hassles, or maybe even plane fare would be part of the cost. So if you've got more Macs to configure than hours in the day, consider ESD as a way to keep your users happy and current without breaking a sweat. **m**

Runs Installer Scripts	Supports Conditional Scripts	Supports Deferred Installs	Client Can Postpone Install	Sends Only Required Pieces	Price[1]
●	●	●	●	●	free[2]
●	●	●	○	○	$1045
○	●	●	●	●[3]	$759
●	●	○	○	●	$499
●	●	●	○	●	$470
○	●	●	○	○	$470
○	○	○	●	●	$795
○	○[4]	●	●	●	$495
○	○[4]	●	●	●	$895

included in System 7.5. [3] Network administrator defines required pieces. [4] Product can do conditional distribution.

RAINES COHEN, a cofounder of BMUG, does freelance writing, editing, and electronic publishing from his Alameda, California, home. He can be reached at RainesC@eWorld.com and AppleLink (RAINES).

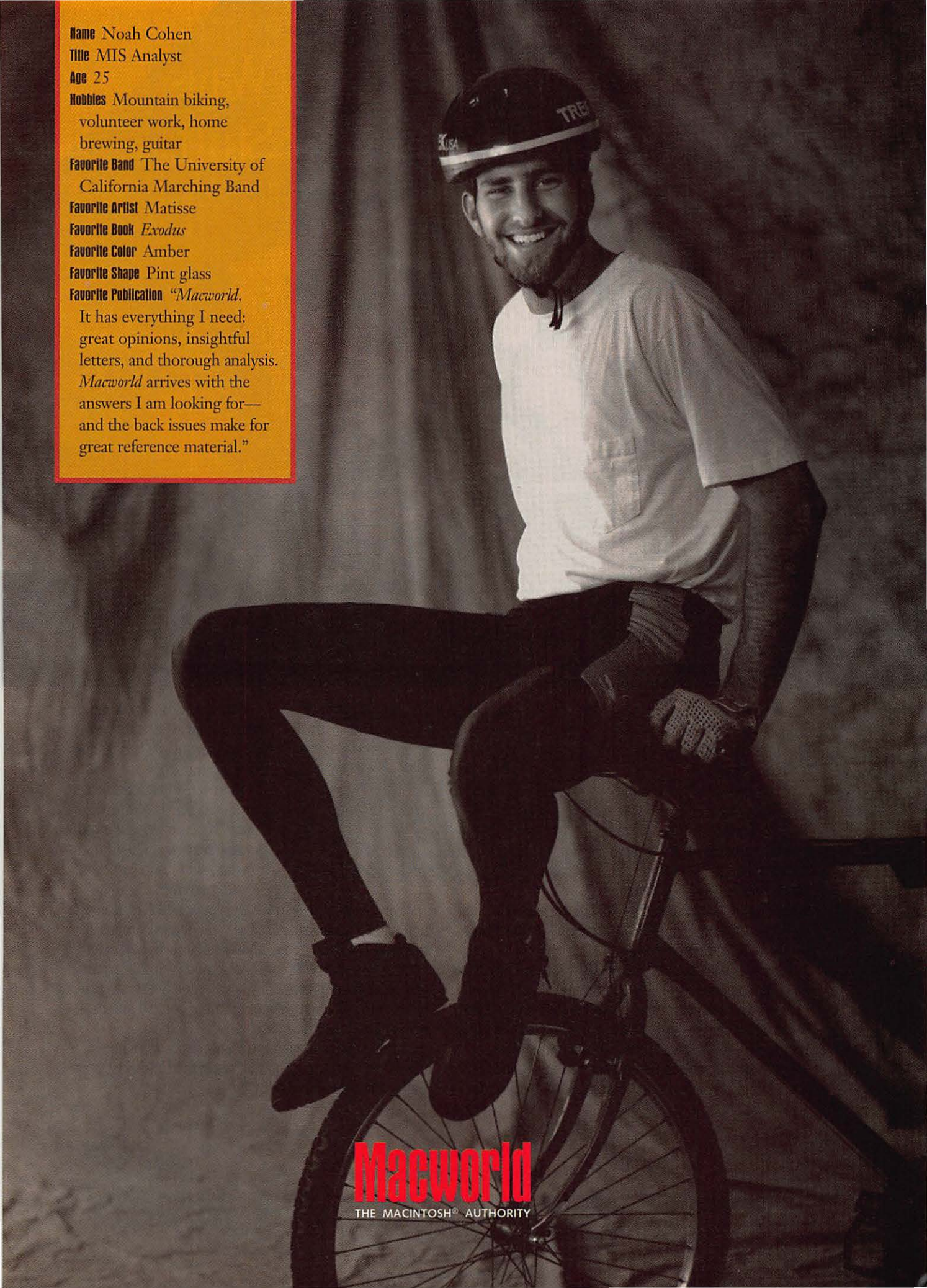
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CTX GREEN MONITOR FEATURE SUMMARY

MODEL	6468GM	1451GM	1462GM	1562GM	1565GM	1765GM	1785GM
Size	14"	14"	14"	15"	15"	17"	17"
Dot Pitch (mm)	0.28	0.28	0.28	0.28	0.28	0.27	0.26
Hor. Freq. (KHz)	30-38	30-50	30-62	30-62	30-65	30-65	30-85
1600 x 1280 NI	—	—	—	—	—	—	Yes(60Hz)
1280 x 1024 NI	—	—	—	—	Yes(60Hz)	Yes(60Hz)	Yes(75Hz)
1024 x 768 NI	87Hz/I	60Hz/NI	75Hz/NI	75Hz/NI	75Hz/NI	75Hz/NI	75Hz/NI
Mac Compatibility	—	—	Yes	Yes	Yes	Yes	Yes
Flat Square	—	—	—	Yes	Yes	Yes	Yes
Color Match	—	—	—	—	—	Yes	Yes
Digital Controls	—	—	—	—	Yes	Yes	Yes
MPR-II & ISO9241-3	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Power Savings	<30W	<30W	<30W	<30W	<5W	<5W	<5W

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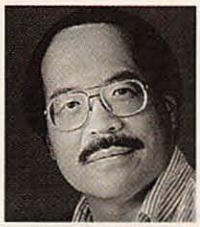
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Circle 38 on reader service card



BY CARY LU

PowerBook Notes

Alternative Battery Strategies

BY FAR THE SINGLE MOST COMMON complaint about all laptop computers is their short battery life. Internal batteries run for one to four hours, depending on the PowerBook model and how it's used. But even four hours isn't long enough to last through a flight from Los Angeles to New York, much less an overseas flight.

One alternative is to carry several batteries, although you must plan their use systematically. First, label each battery so you can tell them apart. You'll have to keep track of which battery is charged and use each battery in turn. Before changing batteries on a PowerBook 140 through 180, you must either shut the PowerBook down or put it to sleep while a small temporary power supply is plugged into the AC adapter connector. These temporary power supplies use a 9-volt battery and are available from many companies; the Lind Memory Saver ($10.95) has the best design. As long as it's in sleep mode, a PowerBook 100 doesn't need a temporary power supply when you're changing batteries.

To charge multiple internal batteries successively for a 100-series PowerBook, you have to plan carefully. A fully depleted nickel-cadmium (NiCad) battery takes 3 to 4 hours to reach an 80 percent charge and 6 to 8 hours to fully recharge—if you are not using your PowerBook. Two batteries take 12 to 16 hours for a full charge, and you have to be there at the midpoint to change the battery. Three batteries take 18 to 24 hours to charge; set an alarm clock for the battery changes.

The only way to streamline the process is to use an external battery charger. These don't save much time, since they typically take about 10 hours to charge two batteries simultaneously, but you don't have to change batteries. Chargers are bulky and need an AC adapter; some do not come with one but use Apple's PowerBook AC adapter instead. Note that you won't be able to charge batteries and use the PowerBook at the same time—unless you carry a second AC adapter.



PHOTOGRAPH BY PAUL FRANZ-MOORE/SCREEN IMAGE BY JIM LUDTKE

The 200-series (Duos) and 500-series PowerBooks can handle multiple batteries more gracefully. Like the PowerBook 100, neither series requires a temporary power supply for changing batteries during sleep mode. A Duo can charge a battery in 2.5 hours; a 500-series PowerBook can charge two batteries simultaneously in 2 hours.

External Batteries

For a 100-series PowerBook user, the alternative to multiple batteries is an external battery. The special charger needed by some units adds to the traveling weight (see "External Batteries").

How long can you run your PowerBook on these batteries? The table shows the capacity of the batteries in watt-hours and the relative capacity compared with Apple's internal battery. For example, a battery with a relative capacity of 1.7 will last roughly 1.7 times as long as an internal battery. Since an external battery is always used in conjunction with an internal battery, the two batteries together will last 2.7 times as long as the internal battery alone. Thus, if you got 1 hour out of an internal battery, you can now get 2.7 hours; if you got two hours, you can now get 5.4 hours. The exact battery life will vary, of course, depending on how you use your PowerBook.

Nearly all of these external batteries use lead-acid cells, a tried-and-true technology. Lead-acid batteries are easy to manage; you can charge them at any time without having to run them down first. (To protect the environment, return worn-out lead-acid batteries to the manufacturer for recycling.)

Recharging Batteries

The recharging times quoted by the battery companies are not comparable, and so I did not list them in the table. Some companies calculate the time it takes to recharge both the external and internal batteries using one of the most common AC adapters. Others measure only the external battery recharged with Apple's highest-capacity AC adapter (shipped with the PowerBook 165c and 180c) and consider an 80 percent charge as good as a full charge. As a general rule, recharging an internal and an external battery for 100-series PowerBooks takes between 6 and 12 hours.

continues

External Batteries

	Capacity (watt-hours/relative)	Price	Battery Size (in inches)	Weight	Notes
Batteries for 100-Series PowerBooks					
AER Power 20[A]	240/13.8	$748.00	11.6 × 6.8 × 3	6 + 2.2 lbs[B]	After 20 recharges, replacement battery $399
Apple Internal	17.4/1	$65.00	4.3 × 4.1 × 1	0.9 lb	
BTI Industrial MC-180x	48/2.8	$259.00	8.8 × 3.5 × 2.2	3.5 + 1 lbs[B]	Large brick; includes car battery-charging cord
BTI SlimPack MC-180S	38/2.2	$169.95	11 × 6 × 0.5	2.5 lbs	
BTI SlimPack MC-190S[A]	60/3.4	$300.00[C]	11 × 6 × 0.6	3 lbs	
Lind Auxiliary "D Cell" Power Pack	60/3.4	$79.95	11.5 × 2.8 × 1.4	3 lbs with batteries	Uses 8 alkaline D cells; not enough current for color PowerBook; 0.5 lb empty
Lind Auxiliary Power Pack APP-2	60/3.4	$99.95	7.5 × 4.5 × 2.5	5 lbs	AC adapter, includes car battery-charging cord
Lind Portable Power Pack APP-102	55/3.2	$199.95	11 × 6.3 × 1	4 lbs	
Technöggin PowerPlate Mini 3	30/1.7	$169.95	9.4 × 5.7 × 0.5	1.7 lbs	
Technöggin PowerPlate 3x	30/1.7	$239.95	11.3 × 9.3 × 0.6	2.5 lbs	Replacement battery $100
Technöggin PowerPlate 5x	60/3.4	$299.95	11.3 × 9.3 × 0.95	4 lbs	Replacement battery $160
Technöggin PowerPlate 5XL[A]	60/3.4	$329.95	11.3 × 9.6 × 0.4	3 lbs	Can condition NiCad; replacement battery $160
VST ThinPack	30/1.7	$199.95	9.4 × 5.6 × 0.4	1.5 lbs	Replacement battery $79
VST ThinPack Plus	60/3.4	$279.95	11.2 × 9.4 × 0.4	3 lbs	Replacement battery $159
Batteries for Duos					
Apple Type 3 Internal	18/1	$75.00	4.8 × 3.5 × 1	0.9 lb	
BTI SlimPack MC-200S	38/2.8	$299.95	11 × 6 × 0.5	2.5 + 1 lbs[B]	Has special charger
Lind Auxiliary "D Cell" Power Pack for Duo	60/3.3	$79.95	11.5 × 2.8 × 1.4	0.5 lb empty; 3 lbs with batteries	Works with Color Duos
Lind Portable Power Pack APP-202	55/3	$229.95	11.2 × 6.8 × 1.1	4 + 1.25 lbs[B]	Has special charger
PerFit Duo PowerPack[A]	55/3	$199.00	8 × 5 × 1	3.2 lbs	Replacement battery $60
Technöggin PowerPlate 4x Duo[A]	42/2.3	$299.95	10.8 × 8.1 × 0.4	2.6 lbs	Replacement battery $160
VST ThinPack Duo[A]	50/2.8	$299.95	10.6 × 8 × 0.4	2.7 lbs	Replacement battery $169

[A] Scheduled for shipment by summer 1994. [B] Battery plus special charger. (All information supplied by manufacturers.) [C] Estimated. Sources: Technöggin, 513/321-177, 800/305-7936; Lind, 612/927-6303, 800/659-5956; BTI, 213/728-7874; VST, 508/287-4600; AER, 404/433-2127; PerFit, 303/530-7333.

Some Unusual Power Sources

Three power sources don't follow the usual patterns. Lind makes a battery case that takes eight alkaline D cells, the same ones used in flashlights. The alkaline cells are disposable, so the cost of operation is fairly high. But you can carry spare D cells when you have no power source for charging a battery.

One unusual yet obvious way to get power is from the sun. The $369 SunPack Super Charger from Keep It Simple Software (406/442-3559, 800/327-6882) unfolds into an 18½-by-32-inch solar panel with a cable for attaching to a 100-series PowerBook. On a sunny day, this panel can run a PowerBook—even a color model (using a few energy-saving practices)—entirely on solar power. It can also charge an internal battery in a day. The half-size $189 SunPack cannot develop enough power to fully operate a PowerBook, but it can extend battery life on a monochrome PowerBook by several hours. The SunPack needs two sunny days to charge an internal battery.

Zinc-air batteries have been common for many years in very heavy-duty applications, such as unattended warning-light buoys in harbors, and in tiny hearing aids. Currently, these batteries are not rechargeable, but AER Energy Resources has been developing a rechargeable zinc-air battery for computers. The prototype Power 20 battery is heavy, and you have to carry both a special charger and a PowerBook voltage adapter, but AER says it will run a monochrome PowerBook continuously for 20 hours. This very expensive battery is good only for 400 total hours of operation; you then have to buy a new one. And the AER battery is not in production yet. Other proposed zinc-air batteries from companies such as Matsi are many months away from even a prototype.

Toshiba has begun shipping a lithium-ion battery for its Portégé computer, a DOS laptop. The lithium-ion technology is the most promising for the near term, since these batteries boast about 70 percent more energy per pound than nickel–metal-hydride (NiMH) batteries. The power-management circuits in the 500-series PowerBooks could work with a future lithium-ion battery, but for now such batteries are in short supply and quite expensive.

Making a Choice

For the longest run-time operation of a PowerBook at the lowest cost, Lind's little-known Power Pack APP-2 is a bargain. It's an older, somewhat inelegant design (weighing in at a hefty 5 pounds) that takes 12 hours to recharge—longer than the 60-watt-hour competition—but it sells for less than half the price.

For a monochrome PowerBook, I'd choose one of the thinnest models for the most portability. For a color PowerBook, you really need a heavy battery—one reason to avoid a color model unless absolutely necessary. ■

CARY LU is a *Macworld* contributing editor who covers mobile- and remote-computing issues in this monthly column.

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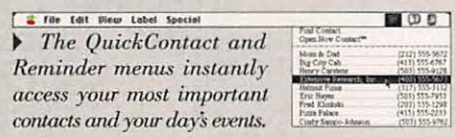
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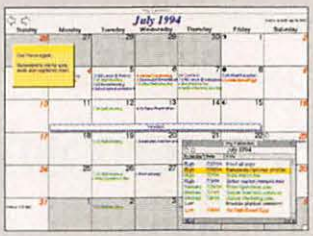
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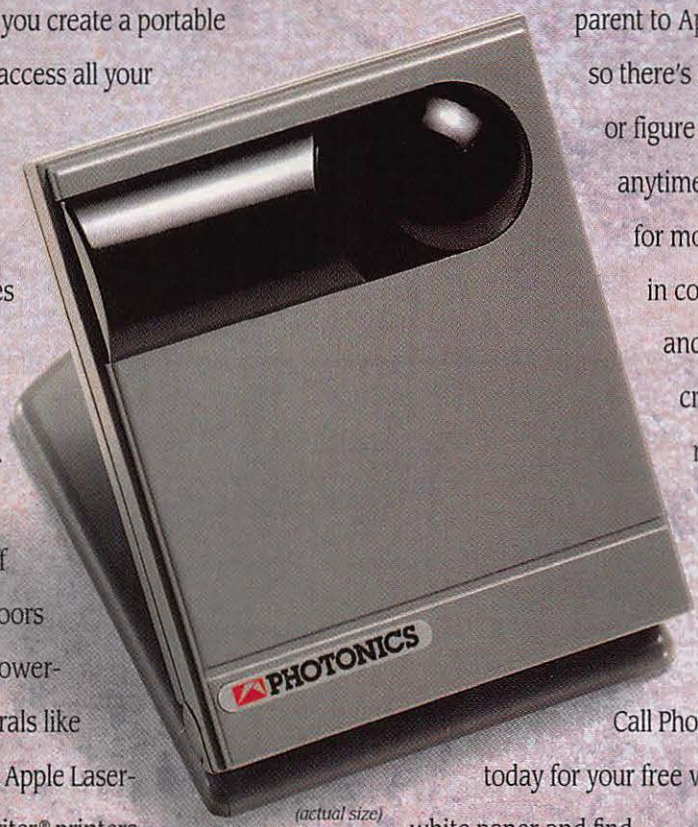
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BY DAVID POGUE

The Mac for Fun and Prophet

The seer pleasure of astrology, tarot, and I Ching software

BUSINESSPEOPLE USE THE MAC to predict the future all the time. They call it budgeting, making projections, forecasting. Makes ya think: if we trust the computer to see into our companies' futures, then why shouldn't it be able to foretell *our* futures? Wouldn't it be nice to know how things are going to turn out? Five years from now, will this investment work? Will this marriage work? Will this PowerBook work?

America's programmers have supplied us with numerous ways to take a peek behind the heavy curtain of destiny. Astrology, tarot, and even the *Book of I Ching* have found their ancient way onto our modern hard drives. Can these blendings of ancestral art and contemporary computing really provide insight into ourselves and our fates? To find out, all you need is a moment of quiet meditation; a still, steady candle-flame of faith; and maybe a 300-kilobytes-per-second CD-ROM drive.

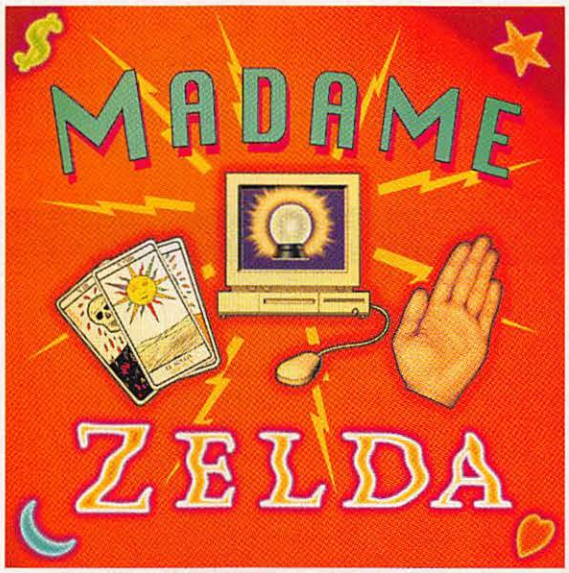
Io Graphic Astrology

Actual astrology—as opposed to the fortune-cookie-esque newspaper blurbs—involves two steps. The first is pure astronomy: you calculate a chart that plots the precise positions of the planets at the place and time of your birth. The Mac is great at this; it performs in two seconds what took the ancient Egyptians weeks to scratch into the dust.

The second half of the astrologer's task is more mystical: to *interpret* the chart, gauging the impact of each planet's position on the subject's life and times. The Mac isn't such a hotshot here—the best it can do is cough up a set of prewritten blurbs, revealing your fate one planet at a time.

That's probably why the expensive, frighteningly complete Io series of programs-for-pros is sold in modules (Time Cycles Research, 203/444-6641). Io Edition ($295), the cornerstone of the series, does only the diagrams. Its vast arsenal of charting features accommodates every conceivable subsect of astrological belief—Placidus, Porphyry, Heliocentric, and dozens of others—and an even huger number of chart styles.

Io HoroScope, Io Forecast, and Io Relationship ($249.50 each) aren't big on charting, but they do provide written reports on your daily, future, and romantic/partnership outlooks, respectively. The text ranges from sweeping and touchy-feely ("Pisces represents the final stage in the evolution of man and his place in the universe") to the impressively specific ("Swelling and sore feet are common complaints"). You can also buy the American Atlas and International Atlas modules ($195 each or $295 for both), which let you enter your birthplace by clicking on a map rather than typing in the latitude and longitude.



Thanks to a special laser font, the Io programs' star-chart printouts are (forgive me) truly stellar. This software is pricey, and it presumes that you already know astrology. But if you're a pro, then Io, Io, it's off to work you go.

Astrology Source

The programming of this $59.95 CD-ROM needs work. It's HyperCard-slow; some features occasionally stop working; font problems spring up; sounds drop out; the manual is puny, DOS-oriented, and unhelpful, with no instructions for interrupting the numerous narrated slide shows; and as is typical of Multicom discs, no phone number to call for help appears anywhere in the package. (My revenge: it's 206/622-5530.)

With all that off my chest, I'll shock you: I dug this disc. Astrology isn't exactly child's play; you can't talk to an astrologer for five minutes without fielding phrases like "Your quincunx is trine with the ephemeris." Astrology Source, of all the astrology products I tried, is the only one that *teaches* this technical topic to the tyro.

Perfect example: Once it knows the time and place of your birth, Astrology Source displays your chart. You can click on a planet in the diagram and hear a voice explain that planet's bearing on the overall divination. In other words, you not only get your fortune told but also learn the rationale behind it. The readings themselves are too safe (they're of the "You enjoy ice cream; you dislike torture" school), but otherwise, Astrology Source has a nice approach—equal parts entertainment and scholarship.

Visions 1.02

Since I'm scarcely a starstruck astrology scholar, I showed my software to a guy who's studied astrology for 40 years. He surprised me by fervently championing Visions—the simplest, cheapest, least-fledged program of them all ($39.95;

continues

STEPHEN DURKE

Lifestyle Software Group, 904/825-0220). "It's accurate, it's beautifully written, and it knows its limitations," he said.

I wondered what the fuss was about. Visions *is* terrifically written—both the "fortunes" and the manual. But it's in black and white, and the chart is oversimplified to the max, eliminating such usual elements as asteroids, cusps, and even the constellations themselves. And when I calculated my sister's chart, I caught Vision in a blatant contradiction.

But since then, the program has spooked me several times. Its predictions are so specific that, when they're right, my hair stands on end. Take last Monday. I had to make a one-hour trip to a computer store to test new Mac models. Just my luck: I managed to just miss both the bus out *and* the bus back. As I waited grumpily for the next bus home, I ran Visions on my PowerBook. This is exactly what it said: "You should be extremely careful if your work requires travel, and you should take unexpected events in stride." Gulp.

Synchronicity 3.0.6

The *I Ching* (pronounced *ee ching*) is an ancient book filled with ancient metaphorical paragraphs. To get your divination, you're supposed to toss three coins three times, taking note of the heads-tails patterns that emerge. (The more authentic method calls for a bunch of yarrow stalks, but I couldn't find any at the Stop-n-Shop.) You look up that particular pattern in the book and read a little passage about threatening rain clouds, or battle tactics, or docile mares. And you apply that reading to the question you want answered.

Synchronicity is a computerized version of the *I Ching* ($59.95; Visionary Software, 503/246-6200). In the translation to silicon, some of the primitive earthiness may have been lost: instead of tossing yarrow twigs, you press keys on your keyboard. And to indicate that you've sufficiently relaxed your muscles, focused your mind, and let your spirit roam free, you, well, you press return.

On one hand, Synchronicity is artistically done. The colors are rich, the background sounds of a gurgling spring are soothing, and that gorgeous, graceful font—what *is* that font?

On the other hand, even the astrology programs go farther out on a limb than Synchronicity. I mean, it can hardly go wrong with "What is already established needs to be carefully tended . . . what is incomplete should be finished." This program might be fun at a cocktail party, but I wouldn't schedule surgery with it.

Virtual Tarot 1.0

Tarot, of course, is another ancient system of fortune-telling, using an ornate 78-card deck. The cards' order, their identity, and their orientation (right-side up or down) all play roles in the reading.

The word *tarot* rhymes—depending on whom you ask—with either *sparrow*, *parrot*, or *Perot*. On this CD-ROM ($69.95; Virtual Media Works, 408/739-0301), the QuickTime movie hosts favor the third pronunciation. They also favor a mirthless, almost holy tone, accompanied by spacey New Age music.



Me and My Tarot Virtual Tarot's graphics are gorgeous. The cards themselves, alas, are a missed opportunity: they're too small to show much detail.

Otherwise, the Virtual Tarot disc is masterfully engineered. Help and navigation buttons are ever-present. The program's graphics, styled after the covers of *Omni* magazine, are lush and professional. The disc takes pains to cover the history and philosophy of tarot.

To consult Virtual Tarot, you click on the deck to place cards; the dirty work—remembering the layouts, what each position means, what each card means—is all done for you. Just click on a card to hear a narrator explain its meanings. You'll probably find tarot predictions either especially intriguing or especially pointless, depending on your taste for ambiguity. When I asked how I'll do financially next year, this answer came back: "A man, 18 to 40, who is emotionally distant." Aha.

Ultimately, Virtual Tarot's best feature is that it explains tarot without preaching it; you can be an utter nonbeliever and still enjoy the disc. Its careful organization, smooth operation, and lustrous graphics make it a virtual delight.

The Upshot

Your enjoyment of any future-tense software depends on how seriously you take these ancient arts. If you're the type who reads your newspaper horoscope for kicks, you'll probably find that Visions strikes the nicest balance between fun and fortune-telling. The CD-ROMs, such as Astrology Source and Virtual Tarot, are ideal for learning more about this stuff. And if you're a real astro-scholar—somebody who scoffs at computerized interpretation—get Io Edition. My prediction: you'll thank your lucky stars. **m**

Contributing editor DAVID POGUE is the author of the number one Mac book, *Macs for Dummies*, and its companion, *More Macs for Dummies* (IDG Books Worldwide). He lives in Manhattan, where stars have not been visible in the sky since 1958.

BENCHMARKING THE PLANETS

Most people giggled when I told them I was running some benchmark tests on my astrology programs. I mean, how do you measure mysticism?

Still, I thought I should make at least *some* attempt to gauge the relative accuracy of this software. Therefore, I performed 15 readings (the three astrology programs—Visions, Astrology Source, and the Io series—for each of five people). I split the readings into individual statements and submitted the unlabeled, mixed-up statement sheet to each of the five subjects. They were supposed to rank each statement—about themselves—as being True, False, Way True, or Way Wrong.

When they returned the tests to me, I tallied the responses and sorted them by program. True and False were worth +1 and –1 points, respectively; Way True and Way Wrong got +2 and –2. Now, I knew that my test had a couple of flaws. For example, one subject didn't know how to mark this one: "As a collector, a packrat, you can't let go of things—you even hang onto doomed relationships." While the second part was way true, the first part definitely wasn't.

Anyway, when the dust settled, Astrology Source seemed to win big-time, with a score of +41; the Io series and Visions tied at +13 apiece. As I studied the data, however, I discovered a final flaw in the test: Astrology Source won because its prophetic skills were the *weakest*. Yes, that's right: Astrology Source is the one with the especially generic responses, statements that would apply to anybody. I therefore declared Visions the winner; its score is actually worth much more, because this program dares to make riskily specific predictions.

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Other **Yearly** Income Sources

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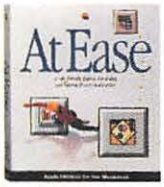
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THE ICONOCLAST

BY STEVEN LEVY

The Vision Thing

Dreams and pragmatism at the new Apple

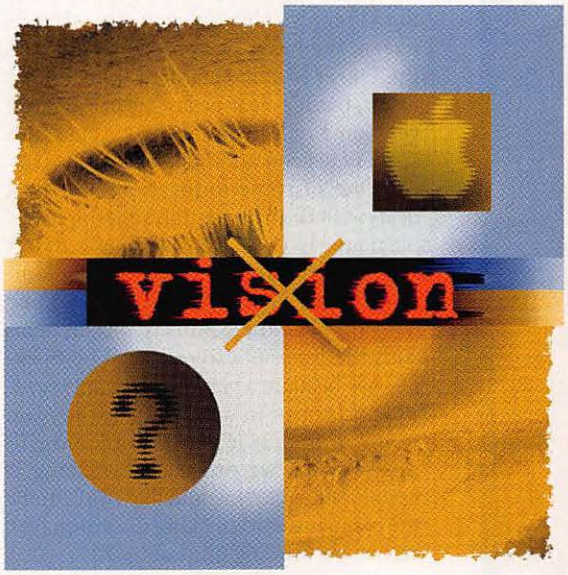
HAS APPLE LOST ITS VISION? I've been amazed this year, while speaking to journalists, user groups, and callers on talk radio, at how many people accept this loss as a foregone conclusion—*what* vision?—and instead jump to the next question, "Is Apple going to die?" The latter question is easy to answer: Not in the foreseeable future. Apple is still a cash-rich company with lots of great products, and it can probably afford two truly major screwups before it gets into serious trouble. The apparent success of the Power Macs has temporarily stilled some of that Apple-is-going-to-die talk.

The Vision Thing is another matter. There is, of course, a generally accepted dogma about the question. It goes like this: Apple has always been a company whose success rested on how well it tempered visionary leadership with tough business skills. Steve Jobs, who was pure vision, had to hire a nuts-and-bolts guy from Pepsi, John Sculley, to reach vision equilibrium. When Sculley ditched Jobs there was a distinct vision shortage, so for a while Sculley relied on the futurisms of Jean-Louis Gassée (who once said that the Apple II smelled like infinity, thereby ensuring his place in the Vision Hall of Fame).

Then Sculley decided that *he* was a visionary, and went around the world making speeches about knowledge navigation and PDAs. Eventually, Apple's board of directors decided that Sculley was *too* visionary and pulled the plug on him. His replacement was Michael Spindler, who was headlined in a recent *Forbes* article as "Apple's Mr. Pragmatist." Thus leaving Apple without a designated visionary.

This is a problem for Apple more than any other company because Apple's crown jewel, really, is its vision. It's as if the corporate engine is tuned to run on fumes. Apple's mission statement has been essentially unchanged since the company's formal inception in 1977: in the words of Mr. Pragmatist, this mission is "making the promise of powerful technology available to individuals in a meaningful, exciting, and affordable way." (The company's record is rather spotty on that last count.) But there are literally hundreds of companies with virtually identical missions. Apple has won its cachet by its *unspoken* mission—to make computers so easy to use that it seems magical, to perform high-tech miracles that solve problems you didn't even know you had, to blow people's minds by doing what others say can't be done. Apple has always benefited by its reputation as a liberating force, the cavalry that arrives just in time to rescue us from inadequate, kludgy, or downright boring technology.

With other companies, vision is a finishing touch, a carnation in the corporate lapel. With Apple it's just about the whole suit of clothes. True, nobody buys computers simply because the company is visionary. But when you have as small a market share as Apple does, there has to be a compelling reason for customers to even consider looking toward Cupertino. For Apple, the vision has always been quite directly tied to its product: a five-second glimpse of the desktop revealed why Macintosh was different from its competitors. But now that Windows, the ersatz Mac Operating System, is ascendant (and its successor Chicago is looming as even tougher competition), it's obvious that Apple needs an infusion of vision. Is it there?



MICHAEL EPPS

Mr. Pragmatist

I went calling on Apple to find out. Who, I asked, will tell me about Apple's vision? The spokesperson I contacted told me that the best person would of course be Michael Spindler. But Spindler was too busy to speak during my time frame, and they would connect me to someone else.

Still, the very thought was intriguing—Mr. Pragmatist, now weighing in on vision. Was he about to do a Sculley? Would we see him at the next Macworld Expo, sending QuickTime videos on a wrist communicator and commanding software agents to seek and destroy Bill Gates? Probably not. During Spindler's big speech at the March Power Macintosh launch, which was set up as sort of a State-of-the-Apple report, he intermittently tipped his hat toward the Vision Thing—a "start of a new era" here, a "welcome to the future" there, and even an occasional "you will see us offering breakthrough innovations." But he performed none of the whizbang demos of future-tech that his predecessors reveled in.

Spindler began by posing an important but hardly challenging statement: "We believe many customers are asking the question, How can we get more out of our investments in personal computers?" The answers, which included "applying technology to new ways of working," and changing personal computers to make them "more useful and relevant, and less costly to manage and maintain," were hardly the stuff of "Star Trek." Though he did mention some innovations, like Open Doc (more on that later) and even an interface

continues

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to the Internet (which a certain columnist had suggested to him in an open letter only a month before [see *The Iconoclast*, March 1994]), there was no demo to make it concrete, to titillate the audience. Just a sincere speech—a pragmatic speech.

Nagle's Law

So maybe it was just as well that we avoided the embarrassing circumstance of an interview that focused on vision. Instead, I talked to the one person on the Apple corporate staff who might be a dark horse for house visionary. This was David Nagle, who is now senior vice president and general manager of the AppleSoft division but formerly fronted Apple's high-frontier Advanced Technology Group. Nagle at first made a joke about my quest—"You want to see if we're having visions?"—but then got right to the meat of the matter. I think he knows how important the issue is to Apple's future.

"Our vision is still the same in spirit as it was in the early 1980s," he told me. "To provide a credible alternative to standard solutions in the personal computer. We've always had a passion for systems that are designed for people." Nagle claims that with the Power Mac, Apple has moved to the unfamiliar but felicitous role of price/performance leader. But he's aware that that role is not enough and that the Windows phenomenon has taken its toll on the luster of the Mac. Nagle says the Power Mac has restored some of that luster, but it's clear he knows that the test will come on the innovations Apple adds to its new generation of Macintoshes.

One of these innovations, he says, deals with the information superhighway, particularly the Internet. Nagle didn't mention the suggestions of this columnist but did say that Apple was working hard to make the company synonymous with the Internet explosion. "The Internet has become a very interesting worldwide information network, but the main problem is that it's incredibly hard to use—I think we can lead in making it usable," he says. "I would like Apple to be the company that's making the vision real, and we're working on that now."

But the real cornerstone to Apple's vision in the mid-1990s, according to Nagle, is Open Doc, which in his words is "a vision to change the fundamental nature of application software." Open Doc is a standard wherein Apple and just about everybody in the industry—with the glaring exception of Microsoft—has agreed to a new, modular way of writing applications. Unlike the bulky, kitchen-sink approach where every word processor or spreadsheet has millions of features, Open Doc applications would be stripped down. Users could then customize applications with their choice of many small components. Libraries of small components—spelling checkers, table generators, indexers, and so on—could be plugged into any sort of application. Eventually, all the software on your desktop would be like the tools on your desk—to work on a document, you'd simply grab the virtual pen, paper clip, paintbrush, or ruler as you needed it.

But is this the sort of earth-shaking change that Apple's popularization of the graphical interface represented? Nagle claims it is, that this innovation is significant on that broad level. He cites Open Doc's interoperable nature: "Today, with different platforms, you have a library of books, but different sets of books require different glasses to read them. Open Doc provides a common library."

Giddy Up

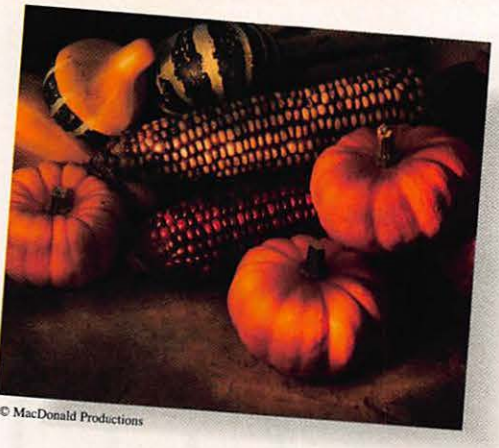
As welcome as that advance would be, my heart was failing to quicken. I guess that's the difference between pragmatism and vision. In the religious tradition, if somebody has a vision and stands shaking in the front of the church to describe it, it sounds as though they've experienced an internal earthquake. They've had a conversion experience, and nothing is the same. Likewise, when Apple's former visionaries described how their silicon-based hallucinations soon would be shipped with the Apple logo, your mouth flew open and you wanted to shout, "Yes! Yes, I want this!" It would change the way you worked, the way you thought, the way you looked upon the universe in its glories. Not, "Gosh, this makes sense and I look forward to evaluating it as a means of enhancing my personal computer investment."

Still, Nagle insists that the vision gap is illusory. Inside Apple, he reports, feelings are running as high as ever. "I've been at Apple five and a half years," he told me. "You know, I was a scientist for many years, and in that situation, when something in a lab is going very well, you get a period in which people are so excited they are almost giddy. We have that level of excitement here. Maybe not everywhere, but with people working on things like Open Doc. People literally giddy with excitement. This isn't everyone in the company, but that's all right—you can't have *everyone* running around giddy."

Somehow, I suspect excess giddiness is the least of Apple's problems. m

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STEVEN LEVY's latest book is *Insanely Great: The Life and Times of Macintosh, the Computer That Changed Everything* (Viking, 1994).



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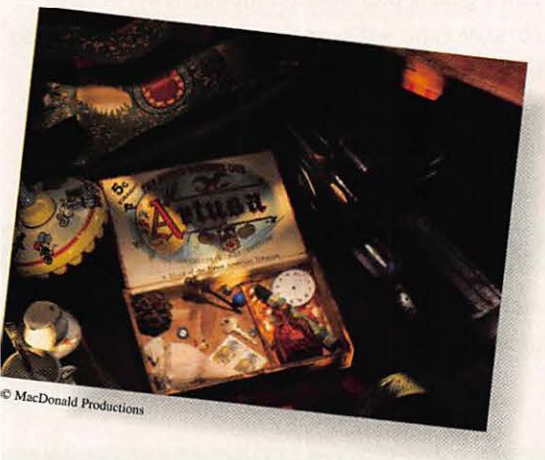
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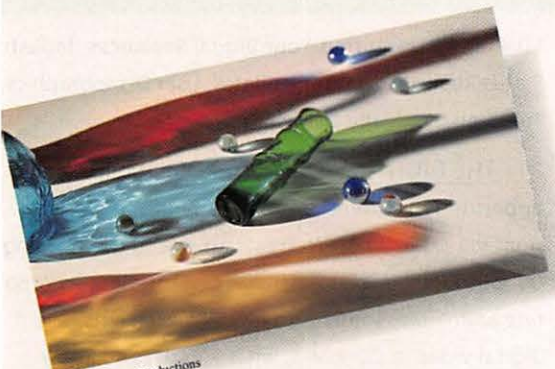
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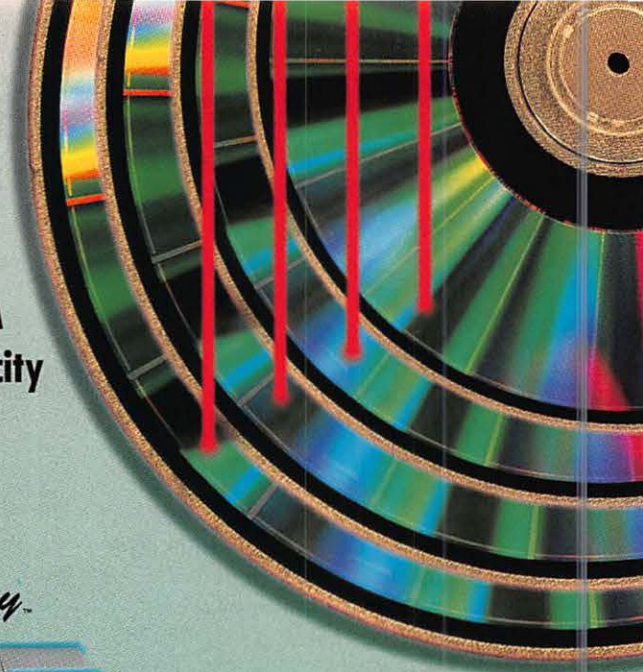
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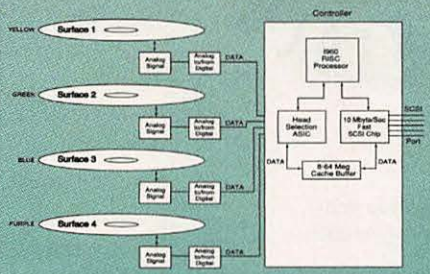
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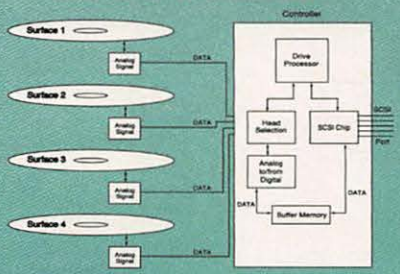
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BY DEBORAH BRANSCUM

Where Are They Now?

An update on seven troubled companies and how to find support

RECENTLY I'VE RECEIVED inquiries from readers asking about the status of several Macintosh companies. In response to those requests, here's an update on Applied Engineering, Business Sense, Dove Computer Corporation, Golden Triangle, Pastel Development Corporation, Saturae Corporation, and Thunderware. Golden Triangle and Thunderware are in business and selling products. Read on for details on those companies and the rest.

Open for Business

The developer of TimesTwo, **Golden Triangle**, fell on hard times earlier this year but is "very much in business, selling and supporting TimesTwo 2.0 and DiskTwin and developing new products," said company president John A. Hamon. In March the San Diego–based company laid off its employees temporarily, and in April it cut the price of its TimesTwo 2.0 driver-level compression package to $59 from its original $149. Golden Triangle has reorganized to reduce staff and expenses and to resolve debt. Currently the company has six full-time employees.

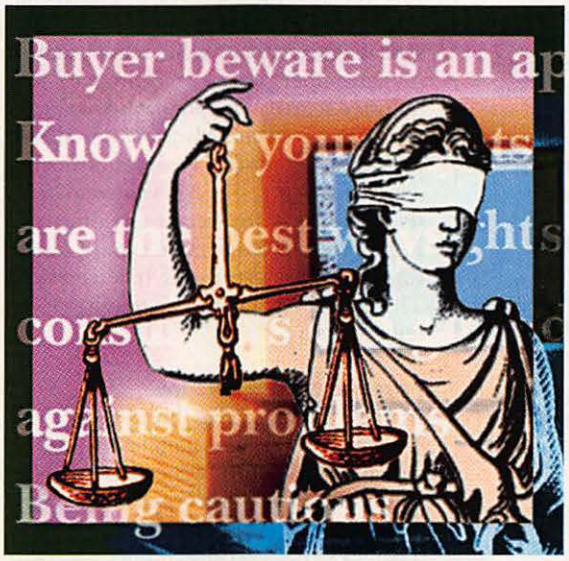
Hamon says, "The compression market literally evaporated last autumn." He traces his company's problems to several factors, including the decline in hard disk prices, public mistrust of compression, and problems with the first versions of compression software from Golden Triangle and others. Despite those setbacks, Golden Triangle continues to promote TimesTwo 2.0 and remains committed to the Mac market.

Longtime Apple developer **Thunderware** is probably best known among Macintosh users for its LightningScan, the first hand-held scanner for the Mac. The small company is still in business but is functioning "at the most rudimentary level," according to Victor Bull, the company president and a co-owner. "We have not yet pulled the plug. We didn't go bankrupt. We wanted to pay our suppliers and our employees."

Most employees have been laid off, and the company is conducting business by fax at 510/254-3047, including arranging to repair products under warranty. As of June, Thunderware continues to sell products, including software upgrades, based on availability.

Missing in Action

According to an attorney representing **Pastel Development Corporation**, the New York–based company is negotiating a sale of its assets and has not filed for bankruptcy. The attorney could not confirm whether the company was still selling or supporting its popular DayMaker personal information manager. A woman reached in May at one Pastel phone number said the office had been closed. At press time, the company's office telephones had been disconnected.



Out of the Running

Dallas-based **Applied Engineering** billed itself as "Apple's oldest and largest third-party developer." It began business in 1979 and closed its doors this spring. AE's product line included accelerator boards, a 16-bit video board for LCs and Performas, and two PowerBook battery charger-conditioners.

Lind Electronic Design of Minneapolis (612/927-6303) has said it will provide technical support and repair services on AE battery chargers purchased before May 1993. According to Lind, it supplied AE with those chargers until that time and sells the same models under its own name. (A company called Interex bought the remaining stock of battery chargers from AE and is reselling them under its own name. Interex can be reached at 316/524-4747.)

Business Sense was formed in April 1992 to market the accounting package called Business Sense (see *Conspicuous Consumer*, October 1992). It also bought the rights to distribute Dollars and Sense. At some point Business Sense became Software Developers Consortium. In April of 1994, company president Ted Wood posted a message in the Business Sense forum on America Online confirming that Software Developers Consortium was no longer in business and stating that he wanted to find buyers for the distribution rights to the programs.

John Weisberg of Resource Management Systems has volunteered to provide online technical support for Business Sense users through AOL (BizSense01), CompuServe (70673,166), and GEnie (J.WEISBERG2). Brian Lawson does the same for Dollars and Sense users on AOL (BizSense03). Dollars and Sense users can export their records to other programs, including Intuit's Quicken and Survivor Software's MacMoney.

Just before it died, Software Developers Consortium alienated some *Macworld* readers by sending them unsolicited copies of Business Sense 2.3 and offering them a free ten-day trial. After that time, according to the direct-mail promotion, "you can choose to return it, or . . . if we don't hear from you, we'll send you an invoice for $399 which includes: FREE upgrades for the next 12 months, and a complete technical support program." (A Federal Trade Commission rule gives consumers the

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right to keep unsolicited products without paying for them.)

Last fall **Dove Computer** shipped its final product, a portable printer. By December the company was effectively out of business, according to president Dave Valliere, although former employees said Dove sputtered into the spring. Company assets were sold to an investor that *Macworld* was unable to contact. The Wilmington, North Carolina–based company got its start in the Mac market by selling memory and later made a name for itself with a line of popular fax modems. In 1992 Dove filed Chapter 11 and never emerged from reorganization.

STF Technologies wrote the original software for Dove fax modems, and its Faxstf 3.0 software supports Dove products' fax capabilities, according to Steve Myers, STF vice president of product management. Delrina's FaxPro supports Dove fax modems, and other programs may as well, so Dove customers who simply want fax software that will be supported can move on. Unfortunately, neither STF nor Delrina supports the voice capability of the DoveFax+V modem.

Saturae Corporation was a promising storage newcomer in August 1993, when *Macworld* selected Saturae's Edge 1000r as an Editors' Choice for 1GB to 1.3GB drives (in the feature "Supersonic Storage"). The Cambridge, Massachusetts–based company went out of business in December 1993, according to one industry source. The phones are currently disconnected and *Macworld* was unable to locate a company representative for comment. One reader has written to chastise *Macworld* for recommending the Edge 1000r, since Saturae cannot honor the five-year warranties it advertised. That's a good point, but it's tough to foretell the future.

Foretelling the Future

In fact, thousands of businesses close down each year, and a number of them will be Mac-related enterprises as the market continues to mature and large companies squeeze out smaller ones. That's a shame, because innovative small companies often spur development in the computer industry. If no one trusted small companies, Apple might still be in a garage somewhere, and Bill Gates might be a college professor.

Large, established businesses tend to be more stable, but they're not immune to market forces or bad management, as these cases show. Unless you have a crystal ball, there's no easy way to predict a company's collapse or protect yourself from the fallout. Even large companies that run credit checks to analyze the financial stability of their customers get stuck with uncollectable debts every year—and they have resources far beyond those of individual consumers.

That said, using a credit card will help protect you from shaky companies. Companies in trouble sometimes charge credit cards for products that haven't shipped, then go out of business. So dispute any charge for a product you haven't yet received, and don't be lulled into passivity by the reassurances of the company that the product is on its way.

If a company does go under owing you money, immediately file a proof-of-claim form with the bankruptcy court in the area in which the company is located (the court clerk's office can send the form). That will help you if the company has any remaining assets and has actually filed for bankruptcy, although it's no guarantee that you'll see any greenbacks.

Being orphaned is no fun. But it's a risk we take as part of the wacky world of computing. If you need support for an orphaned product, a local user group, bulletin board service, or national online service may be able to connect you with other users who've experienced the same problem and know a solution. **m**

Research assistance by SUZANNE COURTEAU.

Send nominees for sainthood to *Service Heroes, Macworld,* 501 Second St., San Francisco, CA 94107, or via Internet (Branscum@AOL.com). Conversely, drop *Conspicuous Consumer* a line if a company is ignoring you.

SERVICE HERO

CE Software can't be beat for service, according to Alan D. Johnson of Danville, Illinois. Last year Johnson was dismayed at the loss of a couple of features in CalendarMaker when he upgraded from 3.0 to 4.0. When he called to inquire, CE said that version 4.1 included the missing features and waived a $5 shipping-and-handling fee for the upgrade since Johnson had bought 4.0 a mere five days earlier. When the upgrade arrived and was damaged, Johnson reported the damage to CE, explaining that his printing company was waiting for the replacement disk to finish an important job. "The company sent the new disk [via] overnight express and we got the job out on time," writes Johnson.

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With Personal Font you can join the personal impact of your own handwriting with the convenience and power of you personal computer. Imagine running your spell checker on your handwriting! Use your word processor's cut and paste features to polish up your handwritten letters. Add a friendly handwritten P.S. note to your business correspondence. Or even sign your FAX-modem messages!

CREATE YOUR FONT TODAY!

For your own Personal Font, simply write the 26 words as well as the capital letters, numbers and punctuation found on the back of this page. From that sampling, Signature Software font designers will individually convert your handwriting into a custom font which duplicates the unique way you create each word - not just each letter. Your font will include your signature and will even have a name which you specify.

HANDWRITING FROM THE KEYBOARD.

Personal Font captures your handwriting at its best. Your font has the same style and character as your own handwriting - without the inconsistencies and inkblots! With your own Personal Font in the Font Menu you'll find yourself creating handwritten notes without hesitation - straight from your keyboard!

Since each order is custom, please allow two to four weeks processing time. If you're in a hurry, for an extra $25 Signature Software will ship your order within five working days.

Actual Handwriting vs. Personal Fonts:

Peter's actual handwriting.
Peter's Personal Font.
Peter Matthews - Toronto, ONT

Colin's actual handwriting.
Colin's Personal Font.
Colin Johnson - Portland, OR

Your Personal Font can be installed and used as simply as an "ordinary" font. It appears in your menu and functions just like any other typeface in your computer.

System Requirements:

Mac - System 6.05 or higher
PC - Windows 3.1
Postscript printers or interpreters. On non-Postscript printers, characters will be disconnected, just as they appear on the screen, *similar to this.*

Signature Software, Inc.
489 N. 8th St. Suite 201 **1-800-925-8840**
Hood River, OR 97031 **1-503-386-3221**

You're looking at a font of my handwriting. If you look closely, you'll find that each character is tailored to the characters around it. The font - by itself - does this automatically. For example, look at my "s" letters in the word "subsystems." When I filled out the form on the next page, I connected most, but not all, of my letters. Even if you don't connect ANY of your letters, everything you'd like to do in long-hand you can now do straight from your keyboard - including numbers, letters, punctuation, and your signature - in any size or style. Just carefully write 26 words and a few symbols once, and from then on all your handwriting will be at its best. I'm proud of my Personal Font and hope you enjoy yours, too!

Dave Fenwick
Signature Software, Inc.
(800) 925-8840

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Because each order is custom please allow 2 to 4 weeks. Add $25 for 5 day processing. (48 hour processing is available).

*$7.50 special handling includes personalized disk, personal test document and copy of original form.

Price Reduction!
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limited time

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COMPANY

ADDRESS

CITY STATE ZIP COUNTRY

VISA MasterCard AMERICAN EXPRESS DISCOVER CARD NUMBER

(circle one or enclose check)

CARD EXPIRATION PHONE

CARDHOLDER'S SIGNATURE

○ 3.5" ○ 5.25" PC Mac *(circle format desired)*

☐ *YES! Rush me my Personal Font in 5 working days for $25 extra*

☐ *YES! Include SUPERscripts with my Personal Font order for the special bundle price of $139.95*

"For those times when Palatino or Arial just won't do, fonts from Signature Software come to the rescue" -Computer Shopper

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Also Available: **SUPERscripts** Cursive Font Pack
Five Fantastic Handwriting Fonts!

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SAMPLE FORM INSTRUCTIONS

1. Write your signature within the Signature box. For best results, try to ensure that the signature fits within the box.
2. Write the words shown within each box using the broken lines as a base. Begin each word on the left side of the boxes. Characters can be connected or disconnected or a combination of both!
3. Write naturally and consistently. Practice first on a separate sheet of paper. Remember, what you write here will become the final font.
4. For best results use a rollerball or fibertip pen. **Do not use ballpoint pens or pencils!**
5. Use the grid lines in the boxes as an aid to maintain consistent height and slant. Be sure capital letters are proportional to lower case letters.
6. Write your capitals normally. Consider the appearance of capitals when at the beginning of words AND when words are all capitalized. Don't forget the punctuation!
7. Name your font and complete the ordering information on the front of this form. **Indicate PC or MAC on card!**

NOTE: Strike out mistakes and write corrections nearby. Signature Software can even make changes after you receive your font!

kagvals

~~kagvels~~ kagvels

NAME YOUR FONT!

The name must be seven alphabetic characters or less

Signature (your name)

adjoint

bowman

cyclops

doubt

egtype

forgiven

grocery

hydrodyke

ionize

jewfishes

kagvels

lysozyme

mojxe

novque

oxyfobe

polygyne

quote

rybema

skyque

toyjoke

unfaxed

vogue

waywhips

xylosse

yachtque

zigzag

( ) { } [ ] An . Be , Co ! Do ?

Ea ; Fo : Go " Hi ' In ` Ju ~ Ko _

Li # Mo % No $ Of & Pa | Qu @ Ro ^

So + Th – Un * Ve = Wi / Xy \ ‘ Ye ’

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Editors' Choice

THE BEST PRODUCTS FEATURED IN MACWORLD

Edited by Susan Grant-Marsh

Macworld Editors' Choice is a complete listing of the hardware and software products selected as the best of their type in *Macworld's* comparative articles. A ❖ next to a product indicates that we chose more than one product in that category. A ◀ next to a product listing indicates that a native Power Mac version is available.

Hardware

MONITORS

BLACK-AND-WHITE MONITORS, May 93

Portrait monitor: 15-Inch Gray Scale Portrait Display; Mirror Technologies, 612/633-4450; $399, with video-display board $549.

Two-page monitor: ❖ L-View MultiMode; Sigma Designs, 510/770-0100; $1099, with video-display board $1398. ❖ MD 202 Two Page Display; Mobius Technologies, 510/654-0556; $699, with video-display board $798.

COLOR MONITORS, Oct 93

16- and 17-inch: ❖ ErgoView 17; Sigma Designs, 510/770-0100; $1349. ❖ MultiSync 5FG; NEC Technologies, 708/860-9500; $1355 (NEC's estimated dealer price).

SMALL COLOR MONITORS, Jan 94

14-inch display: ❖ Sony CPD 1430; Sony Corp. of America, 800/222-7669; $779.95. ❖ Nanao FlexScan F340i•W; Nanao USA, 800/800-5202; $799.

15-inch display: NEC MultiSync 4FGe; NEC Technologies, 708/860-9500; estimated street price $755.

NETWORK HARDWARE

HIGH-SPEED FAX MODEMS, Oct 93

Teleport Gold and Silver with Global Fax; Global Village Communication, 415/390-8200; Gold $499, Silver $429.

POWERBOOK TOOLS

DUO DOCKING CONNECTORS, Feb 93

PowerLink DeskNet; E-Machines, 503/646-6699; $699.

EXTERNAL HARD DRIVES, Feb 93

❖ Companion 120; APS Technologies, 800/874-1428; $599. ❖ PocketDrive 120MB; La Cie, 503/520-9000; $699.

INTERNAL FAX MODEMS, Feb 93

❖ PowerModem series; PSI, 408/559-8544; $195 to $495. ❖ PowerPort series; Global Village Communication, 415/390-8200; $229 to $499.

PRINTERS

COLOR PRINTERS, Aug 94

Low-end ink-jet: DeskWriter 560C; Hewlett-Packard, 800/752-0900; $719.

Solid ink-jet: Phaser 300i; Tektronix, 503/682-7377; $9995.

Thermal-wax transfer and color laser: Phaser 220i; Tektronix, 503/682-7377, $5995.

DYE-SUBLIMATION PRINTERS, Jul 94

Prepress proofing—tabloid size/fastest: Phaser 480; Tektronix, 503/682-7377; $14,995.

Prepress proofing—tabloid size/most complete: Rainbow; 3M, 612/733-1110; estimated street price of $20,000.

Prepress proofing—letter size: ProofPositive Full Page; SuperMac Technology, 408/541-6100; $7999.

General publishing and business: Phaser IISDX; Tektronix, 503/682-7377; $9995.

PERSONAL PRINTERS, Sep 94

Ink-Jet: DeskWriter 520; Hewlett-Packard, 800/752-0900; $365.

Laser—$1000 to $1600: microLaser Pro 600; Texas Instruments, 214/995-6611; $1599.

WORKGROUP PRINTERS, Feb 94

High-speed: Hewlett-Packard 4Si MX; Hewlett-Packard, 800/752-0900; $5499.

Best buy: ❖ Apple LaserWriter Pro 630; Apple Computer, 408/996-1010; $2529. ❖ Hewlett-Packard LaserJet 4M; Hewlett-Packard, 800/752-0900; $2329.

SCANNERS/IMAGE CAPTURE

ELECTRONIC CAMERAS, Sep 94

Apple QuickTake 100; Apple Computer, 408/996-1010; $749.

LOW-COST COLOR SCANNERS, Nov 93

$1300 to $1600: ❖ La Cie Silverscanner II; La Cie, 503/520-9000; $1599. ❖ Hewlett-Packard ScanJet IIc; Hewlett-Packard, 800/752-0900; $1599.

Under $1300: Mirror 800 Plus Color Scanner; Mirror Technologies, 612/633-4550; $1299.

OCR, Nov 93

OmniPage Professional; Caere Corp., 408/395-7000; $995.

SYSTEMS/STORAGE

DOUBLE-SPEED CD-ROM DRIVES, Jul 93

Sheer speed: Pioneer DRM-604X; Pioneer, 800/444-6784; $1495.

Overall value: AppleCD 300; Apple Computer, 408/996-1010; $599.

Budget choice: NEC MultiSpin 38; NEC Technologies, 708/860-9500; $465.

HIGH-SPEED HARD DRIVES, Aug 93

2.7GB drives: ❖ Nova XL 2700; Microtech International, 203/468-6223; $2999. ❖ Vista 3.5GB; Relax Technology, 510/471-6112; $3499.

SCSI-2 adapter: QuickSCSI; PLI, 800/288-8754; $499.

MACINTOSH UPGRADES, Jun 93

SE accelerator (25MHz): Quik30; Novy Systems, 904/427-2358; $449 (without FPU).

SE/30 accelerator (50MHz or 33MHz): Universal PowerCache; DayStar Digital, 404/967-2077; 50MHz $999 (with FPU), 33MHz $449 (without FPU).

LC and LC II upgrades: Macintosh LC III Logic Board Upgrade; Apple Computer, 408/996-1010; $599.

Mac II accelerators: ❖ Radius Rocket 25i, Radius Rocket 33; Radius, 408/434-1010; 25i $1199, 33 $2499. ❖ Universal PowerCache series; DayStar Digital, 404/967-2077; $449 to $999.

IIfx SCSI accelerator: QuickSCSI; PLI, 800/288-8754; $499.

Quadra static-RAM cache card: FastCache Quadra; DayStar Digital, 404/967-2077; $299 for Quadra 700 and 900, $449 for Quadra 800 and 950.

OPTICAL DRIVES, Dec 93

3½-inch: ❖ Epson OMD 5010; ClubMac, 800/258-2622; $959. ❖ 128 MO; APS Technologies, 800/874-1428; $899.

5¼-inch: ❖ Sharp JY-750; ClubMac, 800/258-2622; $1829. ❖ Infinity MaxOptical 11m; Peripheral Land Inc., 800/288-8754; $4113.

VIDEO/DISPLAY

24-BIT VIDEO CARDS, Apr 94

Inexpensive acceleration: PrecisionColorPro 24XP; Radius, 408/434-1010; $599.

Full-featured acceleration: Thunder II GX•1360; SuperMac Technology, 408/541-6100; $4499.

HIGH-END VIDEO EDITING, Jun 94

Presentation video: ❖ MoviePak2 Pro Suite; RasterOps, 801/785-5750; $4199. ❖ VideoVision Studio; Radius, 408/434-1010; $4499.

Corporate video (offline): Media Composer 400s; Avid Technology, 508/640-6789; $14,995.

continues

MACWORLD Editors' Choice

Corporate video (online): VideoCube; ImMix, 916/272-9800; $40,500.

PHOTOSHOP ACCELERATORS, Apr 94
PhotoBooster; Radius, 408/434-1010; $999.

Software

ACCOUNTING/FINANCE

GROWING A SMALL BUSINESS, Nov 93
Small-business system: M.Y.O.B.; Teleware, 201/586-2200; $199.
Home office/personal finance: MacMoney; Survivor Software, 310/410-9527; $119.95.

BUSINESS TOOLS

STATISTICS, Oct 93
Exploratory data analysis: DataDesk 4.1; Data Description, 607/257-1000; $595.
Comprehensive package: SYSTAT 5.2.1; SYSTAT, 708/864-5670; $895.

CD-ROM

TOP 10 CD-ROMS, Mar 94
Overall: Seven Days in August; Time Warner Interactive Group, 818/955-9999; $79.99.

COMMUNICATIONS/NETWORKS

COMMUNICATIONS SOFTWARE, Aug 94
Basic connectivity: ZTerm; David P. Alverson (no phone number available); $30.
Terminal emulation: Crosstalk for Macintosh; Digital Communications Associates, 404/442-4000; $195.
Internet exploration: VersaTerm; Synergy Software, 215/779-0522; $125.

HIGH-SPEED FAX MODEM SOFTWARE, Oct 93
Faxstf; Telefocus, 816/886-9800; $79.

NETWARE CONNECTIVITY, Sep 93
NetWare for Macintosh; Novell, 801/429-7000; $495 for 5-user license to $2295 for 200-user license.

PROTOCOL ANALYZERS, Jul 94
EtherPeek, AG Group, 510/937-7900; $795.

SOFTWARE ROUTER, Jul 93
Apple Internet Router 3.0; Apple Computer, 408/996-1010; Basic Connectivity Package $499.

TERMINAL EMULATOR, Oct 93
VersaTerm; Synergy Software, 215/779-0522; $149.

GRAPHICS

3-D DESIGN, Aug 93
Price for performance: ❖ Ray Dream Designer 2.0.4; Ray Dream, 415/960-0765; $299. ❖ Alias Sketch 1.5; Alias Research, 416/362-9181; $995.
All-in-one solution: ❖ Infini-D 2.5; Specular International, 413/253-3100; $695. ❖ StrataVision 3D 2.6.1; Strata, 801/628-5218; $995.

CLIP ART'S GREATEST HITS, Jan 94
Overall collection: ❖ ClickArt Studio Series; T/Maker Company, 415/962-0195; $99.95 per volume. ❖ Electronic Clipper subscription service; Dynamic Graphics, 800/255-8800; $67.50 per month. ❖ Metro ImageBase Electronic Clip Art; Metro ImageBase, 800/525-1552; $74.95 per volume, CD-ROM $149.95. ❖ Images with Impact series; 3G Graphics, 800/456-0234; $99.95 to $129.95 per volume, CD-ROM $499. ❖ Typographers' Ornaments; Underground Grammarian, 609/589-6477; $25 per volume; ten TIFF albums $200; EPS volumes $50 each.

DRAW PROGRAMS (LOW-COST), Sep 93
Budget draw: Expert Draw; Expert Software, 305/567-9990; $49.95.
Budget draw/paint: UltraPaint; Deneba Software, 305/596-5644; $79.
Beginners' program: Aldus SuperPaint; Aldus Corp., 619/558-6000; $149.95.
Overall: Canvas; Deneba Software, 305/596-5644; $399.

FONT BUYERS' GUIDE, Mar 94
Text-face collection: Type On Call CD-ROM; Adobe Systems, 415/961-4400, 800/682-3623; $99 (includes the ability to unlock two families from preselected packages) plus $25 to unlock individual faces or $69 to $179 for unlocking families.
Display/decorative-face collection: Fontek; Letraset, 201/845-6100; $39.95 per face.
Bargain collection: Monotype ValuePack; Monotype, 312/855-1440; $89 for 57 fonts.

IMAGE DATABASES, Oct 93
❖ Aldus Fetch 1.0; Aldus Corp., 206/628-5739; $295. ❖ Multi-Ad Search 2.0; Multi-Ad Services, 309/692-1530; $249.

PAINT AND IMAGE-EDITING, Sep 93
Budget buy: Expert Color Paint; Expert Software, 305/567-9990; $49.95.
Overall program: Fractal Design Painter; Fractal Design Corp., 408/688-8800; $399.
Image-editing program: Adobe Photoshop 2.5.1; Adobe Systems, 415/961-4400; $895.

INTEGRATED SOFTWARE

INTEGRATED SOFTWARE, Feb 94
ClarisWorks; Claris Corporation, 408/727-8227; $299.

Vendors: Please write to *Macworld Editors' Choice*, 501 Second St., San Francisco, CA 94107, or send a fax to 415/442-0766 to inform us of changes in your phone number or your product's list price.

ONLINE SERVICES

ONLINE SERVICES, Aug 94
E-mail: America Online; America Online, 703/893-6288; basic monthly fee $9.95.
Reference: CompuServe; CompuServe Information Service, 614/457-0802; basic monthly fee $8.95.

ORGANIZATION/PRODUCTIVITY

CALENDARS, Jul 93
Alarm system: ❖ First Things First; Visionary Software, 503/246-6200; $79.95.
❖ Smart Alarms Plus; JAM Software, 203/630-0055; $75.
All-around scheduler: Now Up-to-Date; Now Software, 503/274-2800; $99.
Meeting scheduler: Meeting Maker; On Technology, 617/374-1400; five-pack $495.

GRAPHING SOFTWARE, Aug 94
DeltaGraph Pro 3 3.0.4; DeltaPoint, 408/648-4000; $195.

SALES-AUTOMATION SOFTWARE, Oct 93
❖ Contact Ease; WestWare, 619/274-5053; one user $395, five users $1495. ❖ CBS; Colleague Business Software, 512/345-9964; $495.

TEXT-RETRIEVAL SOFTWARE, Dec 93
Small system: On Location; On Technology, 617/374-1400; $129.
Multiuser system: Personal Librarian; Personal Library Software, 301/990-1155; $995.

PRESENTATION TOOLS

PRESENTATION SOFTWARE, Jul 94
Persuasion 3.0; Aldus Corp., 206/622-5500; $495.

UTILITIES

BRAVE NEW DOCUMENTS, Jan 94
Application-independent document distribution: Common Ground; No Hands Software, 800/598-3821; $189.95.
Book-length documents: FrameReader; Frame Technology, 800/843-7263; $84.95.

PRINTING, Sep 93
PC-printer cable packages: PowerPrint; GDT Softworks, 604/291-9121; $149.

VIRUS KILLERS, Jul 94
Commercial software: Virex; Datawatch, 919/549-0711; $99.95.
Free software: Disinfectant; free from online services.

VIRTUAL MEMORY SOFTWARE

VIRTUAL MEMORY, Jun 94
Virtual memory software: Virtual 3.0; Connectix Corp., 415/571-5100; $99.
Memory-boosting software: RAM Doubler 1.0.1; Connectix Corp., 415/571-5100; $99. m

The only statistics package you'll ever need.

MACWORLD MW EDITORS' CHOICE

NEW SYSTAT 5.2

"For Mac-based statistical analyses and presentations, choose SYSTAT."
P. Wayner, **BYTE**, 1-92

The most comprehensive and powerful statistics software for Macintosh now provides the most advanced multivariate general linear hypothesis program. Yet it remains the easiest to use–with a friendlier-than-ever interface.

New SYSTAT 5.2 for Macintosh enables you to perform statistical analyses you can't do with any other Macintosh statistics program. It offers more advanced statistical procedures, more types of graphs, and greater data management capabilities.

More statistics, from basics to the most sophisticated

A full range of univariate and multivariate statistics–including multidimensional scaling and nonlinear modeling.

Basics include descriptive statistics, *t* tests, correlations, autocorrelations, simple regression, and frequency tables. With a few clicks you can turn each statistic into a graph.

SYSTAT offers the most advanced multivariate general linear hypothesis program available for Macintosh. SYSTAT can estimate and test any univariate or multivariate model including:

- REGRESSION: simple linear, multiple linear, stepwise, polynomial, mixture, and weighted;
- ANOVA (analysis of variance): one-way, two-way, factorial, nested, unbalanced, post-hoc tests, mixed, repeated measures, split plot, multivariate, means model coding;
- MULTIVARIATE: discriminant analysis, principal components, canonical correlations.

Just point and click

SYSTAT is truly Mac-like. Just point and click: SYSTAT works with the pull-down menus, dialog boxes, icons, buttons and graphics tools you're accustomed to on the Mac.

The most graphics

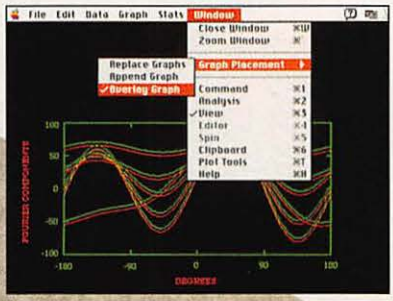
No other statistical or graphics package can produce all the scientific and technical graphs available on SYSTAT–nor surpass its ease of use. And you can save SYSTAT graphics and data in QuickTime™ movie file formats. Graphics options include:

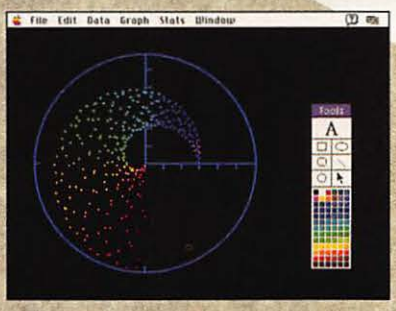
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- confidence intervals and ellipses
- scatterplot matrices
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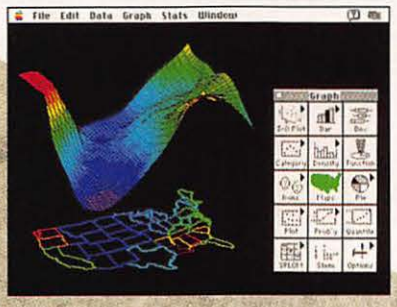
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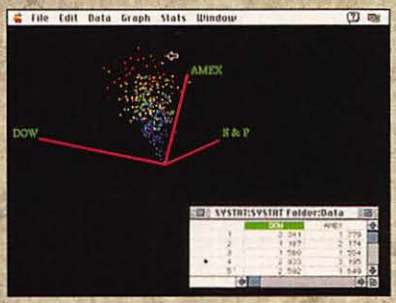
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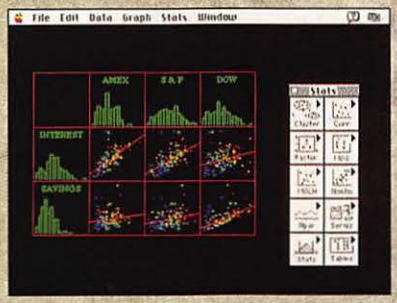
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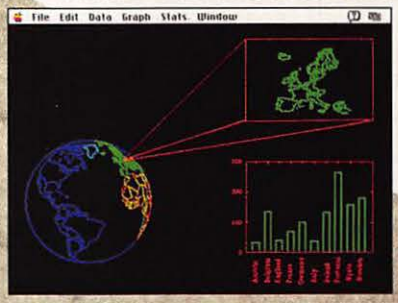












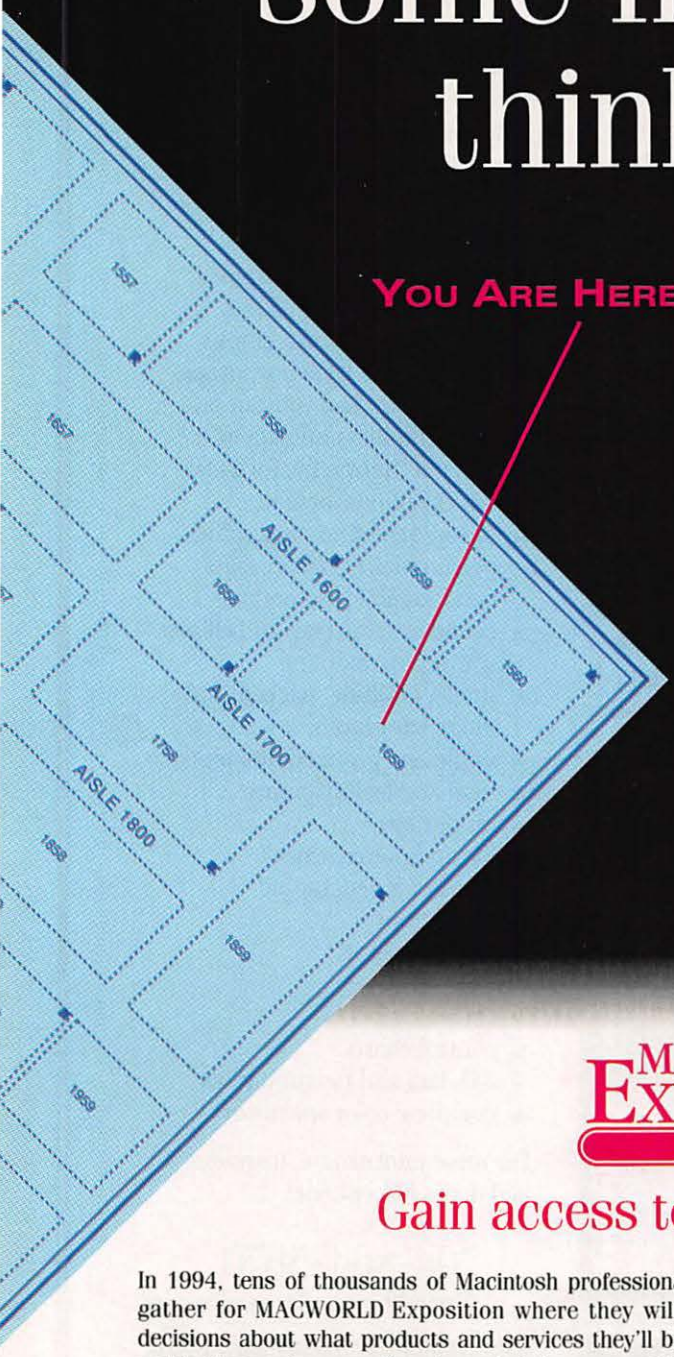
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Star Ratings

OVER 300 HARDWARE AND SOFTWARE REVIEWS AT A GLANCE

Edited by Wendy Sharp

Macworld Star Ratings lets you compare hardware and software products for the Macintosh by providing summaries of *Macworld*'s authoritative product reviews from the past year. The number of stars at the beginning of each capsule review indicates quality; our reviewers assign five stars to outstanding products and one star to poor ones. The ◀ symbol indicates that a product is available in a native Power Mac version, although unless stated otherwise the version we reviewed was the 680X0 version.

If a product has been upgraded since our last review, the most recent version number supplied by the vendor appears in parentheses after the reviewed version number. To read a full review of any product in the listing, please consult the issue listed at the end of each synopsis.

Vendors: Please write to *Macworld Star Ratings,* 501 Second St., San Francisco, CA 94107 to inform us of changes in the version number or list price of your product, or of changes to your phone number.

Software

BUSINESS TOOLS

★★★ **4D First 1.0, ACI US, 408/252-4444, $295.** This entry-level relational database is a low-cost way to distribute the power of 4D and 4D Server to an office full of Macs. It's not much easier to use, however, than the full-fledged 4D. May 94

★★★ **Acrobat Exchange, Acrobat Distiller, Adobe Systems, 415/961-4400, $195 to $2495.** Complete, well-planned paperless office system creates application-independent viewable files that can be readily distributed on a network. Still, it's not yet as inexpensive or as convenient as you might wish. Oct 93

★★ **BaseMap 1.0.1, GeoPoint, 415/957-1560, $149.** For simple maps displaying simple data, this map-making tool may be useful. It's not for the cartographic sophisticate, however, as it offers very limited data-display abilities and only one projection. May 94

★★★★ **ClarisImpact 1.0, Claris Corp., 408/727-8227, $399.** Business graphing, project management, object-oriented drawing, word processing, and presentation functions merge in this business graphics software. The outstanding integration offers versatility that dedicated programs are pressed to match. Jun 94 ◀

★★★★ **ClarisWorks 2.0, Claris Corp., 408/727-8227, $299.** Integrated program has more features, is easier to use and faster, and has better integration among modules than other programs. Aug 93 ◀

★★★★ **Common Ground 1.0, No Hands Software, 415/802-5800, $189.95.** Simple, robust document-interchange system is the clear choice for modest document-distribution jobs. In tests, it worked easily with documents from many different applications. Oct 93

★★★ **Cricket Graph III 1.5, Computer Associates International, 516/342-6000, $129.** Basic and foolproof charting program produces cleaner charts than Excel with little effort, although its feature set is fairly modest. Apr 94

★★★★ **DeltaGraph Pro 3, DeltaPoint, 408/648-4000, $195.** At its new lower price, this charting program is the best feature-for-feature value in Macintosh charting. There's even a new Chart Advisor function that suggests the appropriate display for your data. Apr 94 ◀

★★ **EasyFlow 1.1, HavenTree Software,613/544-6035, $229.** The rough edges and distinctly un-Mac-like attributes of this flowcharting software reflect its DOS heritage, but on the whole it's easy to use. Sep 93

★★★★ **Helix Express 2.0.1, Helix Technologies, 708/465-0242, $589.** Icon-based relational-database software's improved performance makes it a serious competitor for all-Mac networks. Especially notable is its much faster speed; multiuser operation is downright snappy. Jul 94

★★★ **Helix Tracker 1.0, Helix Technologies, 708/465-0242, $439.** Well-designed workgroup-document manager has strong audit and annotation features; imposes just the right amount of administrative discipline. For large documents, however, Ethernet will look mighty attractive. Nov 93

★★ **Lotus Notes 3.0, Lotus Development Corp., 617/577-8500, $495 per client.** Well-organized, robust, and flexible business data system demands a full-time administrator, preferably with considerable programming experience, for effective use. Sep 93

★★★ **Map II 1.5, ThinkSpace, 519/661-4006, $395.** Well-structured program has most of the functions a simple geographical information system needs and is suitable for introductory instruction in GIS and for alert first-time users who just like maps. May 94

★★★★ **MarcoPolo 2.0, Mainstay, 805/484-9400, $395.** Inexpensive, easy-to-use product allows you or your workgroup to archive and retrieve documents, whether in electronic or paper form. Queries are easy to construct and searches are handled quickly. Sep 93

★★★ **Market Master Manager 3.5, Breakthrough Productions, 916/265-0911, $395 to $1995.** Sales-automation software is designed to keep track of contacts, generate mailings, and make sure that leads don't fall through the cracks. It includes a remote module, but it has some odd user-interface features. Oct 93

★★★ **Micro Planner Manager 1.1, Micro Planning International, 303/757-2216, $695.** When you require cross-project resource sharing and leveling for a reasonable price, this project-management software has the edge. It has a generally intuitive interface, though there's a steep learning curve for its advanced features. Nov 93

★★★★ **Microsoft FoxPro for Macintosh 2.5, Microsoft Corp., 206/882-8080, $495.** Dazzlingly fast and easy to use relational database has a greatly improved interface and cross-platform compatibility. For projects of 4 to 20 users that handle large amounts of data (hundreds of thousands to millions of records) it offers excellent performance. Apr 94

★★★ **Office Tracker 1.1, Milum Corp., 512/327-2255, $195 to $995.** The efficient user interface of this software sign-out board, in both single-user and networkable versions, makes it easy to learn and use; but it has some minor flaws. Dec 93

★★★★ **Pablo 2.0.1, Andyne Computing, 613/548-4355, $695.** Database-reporting tool is one of the most effective end-user data-reporting tools yet evolved. It puts a considerable workload on the corporate information department, but it sidesteps the hassles of SQL data access and produces great reports with minimal effort. Jul 94

★★★★ **Project Scheduler 5, Scitor Corp., 415/570-7700, $695.** For most midrange project-planning, this program's many hits outweigh its few misses. It goes beyond the requisite scheduling options, with inflation factors and unlimited projects in memory, and it conforms to accepted standards, so you get consistent, predictable results. Aug 93

★★★★ **TopDown 4.0, Kaetron Software Corp., 713/298-1500, $345.** Flowcharting program's support for custom symbols, multiple palettes, and automatic drawing aids, along with its ability to let you easily create and navigate lower-level charts, make it a productive tool. Jul 94

★★ **Useful Voice Processor for Macintosh 1.1v7 (1.1v9), Useful Software Corp., 508/774-8233, $179.95.** Dictation software lets you record and transcribe on a Mac. It has some useful features, but you must take uncommon care to avoid crashes. Dec 93

COMMUNICATIONS/NETWORKS

★★ **AccessPC 3.0, Insignia Solutions, 415/694-7600, $129.95.** Utility translates most word-processor and some database formats, but it doesn't translate graphics and some of its translations result in data loss. Apr 94

★★★ **Crosstalk for Macintosh 2.0, Digital Communications Associates, 404/442-4000, $195.** Commendable communications product has a feature set that well matches its competition. Still, the script editing is complex and you must manually enter phone numbers each time you use it. Apr 94

★★★ **Delrina FaxPro for Macintosh 1.0,** *continues*

Star Ratings

Delrina Corp., 408/363-2345, $129. Fast, efficient fax software has an excellent address-book feature but also has some interface quirks and minor bugs. **Feb 94**

★★★★ **DOS Mounter Plus 4.0, Dayna Communications, 801/269-7200, $100.** File-transfer and translation utility works with floppies, removable drives, and network volumes and supports wild cards in DOS extensions. **Apr 94**

★★★★ **EtherPeek 2.0.3, LocalPeek 2.0.3, TokenPeek 1.0 (2.0.3), AG Group, 510/937-7900, $495 to $995.** Priced at a fraction of the cost of dedicated hardware analyzers, these network analyzer tools give you better analysis with a friendlier interface. They're a worthwhile investment. **Jan 94**

★★★★ **MacLink Plus/Translators Pro 7.5, DataViz, 203/268-0030, $149.** If your PC files are in archaic formats, you'll need this file-transfer and translation utility. It's a great option for most users, but it doesn't support removable drives or network volumes. **Apr 94**

★★★ **On The Road 1.1, Connectix, 415/571-5100, $99.** Helpful PowerBook utility looks at what's hooked up to your computer and adjusts accordingly—for example, printing when a printer is available and otherwise deferring printing. It only supports some hardware, however, so check before buying. **Dec 93**

★ **PowerShare Collaboration Servers, Apple Computer, 408/996-1010, $999.** Before this collaboration software will be ready for prime time, Apple needs to overhaul the complex Admin application, add serious diagnostic aids, provide comprehensive documentation, and offer knowledgeable technical support at a price less than that of the program itself. **Aug 94**

★★★★ **Silver Cloud 1.2, AG Group, 510/937-7900, $495.** If you are administrating a large network and are drowning in a sea of devices and zones, this network-management software will make your life simpler. **Feb 94**

★★★ **SITcomm 1.0, Aladdin Systems, 408/761-6200, $120.** Inexpensive telecommunications software is fairly easy to set up and use, and will do well for people who use just one or two online services. Still, it lacks true scripting and has limited protocol options. **Apr 94**

★★★ **Snap Mail 1.01, Casady & Greene, 408/484-9228, $200 to $1440.** Software will put you on the electronic-mail trail more easily and more cheaply than any competing product, if you can live with some minor (but surprising) shortcomings. **Jun 94**

★★ **SoftPC 3.1, Insignia Solutions, 415/694-7600, $499.** While the speed of this Windows PC emulator is greatly improved, buying an add-in PC card for your Mac is more efficient. **Mar 94**

★★ **SoftWindows 1.0, Insignia Solutions, 415/694-7600, $499.** You can run Windows software on a Mac with this emulation software, but although it's a viable solution, you pay the price in terms of performance, compatibility, and actual cost. **Aug 94**

★★★★ **Timbuktu Pro, Farallon Computing, 510/814-5000, $199 to $1999.** Terminal emulation product is a must-have for in-house technical-support staff and for people who need direct connection to computer systems on a variety of networks. The major enhancements of this version are TCP/IP support for Macs and noticeably faster screen redraw. **May 94**

★★ **TrafficWatch II 2.0, Neon Software, 510/283-9771, $495.** The price of this AppleTalk traffic monitor is closer to that of full-blown network analyzers that do much more, albeit with greater complexity. Without printing, alarms, triggers, or true multiprotocol support, this product misses the mark. **Jun 94**

★★★★ **VersaTerm 5.0, Synergy Software, 215/779-0522, $195.** The price and feature set of this network terminal-emulation package make it a terrific value, in spite of its complex documentation and limitations. If you're looking for a fast path to Internet connectivity, this is it. **Jan 94**

DESKTOP PUBLISHING

★ **AboutFace 1.1.1 (1.1.2), Big Rock Software, 716/288-2860, $69.95.** Type-specimen generator has many serious deficiencies that need to be addressed. **Jan 94**

★★★★ **Aldus Fetch 1.0, Aldus Corp., 206/622-5500, $295.** The rich feature set and network support of this image-cataloging software make it a clear winner. Although cataloging is slow, users have fine control of the depth and compression of thumbnails. **Aug 93**

★★★★ **Aldus PageMaker 5.0, Aldus Corp., 206/622-5500, $895.** Desktop publishing software has added the features, both great and small, that it's been lacking, while still retaining the ease-of-use advantages that it's always had. This is a superb upgrade. **Nov 93**

★★★★ **FontMonger 1.5.7, Ares Software Corp., 415/578-9090, $149.95.** Font-conversion utility provides cross-platform, cross-font conversion and makes it easy to create composite, subscript, superscript, and rotated characters. **Sep 93**

★★ **FotoTune 1.1, Agfa Division of Miles, 508/658-5600, $795.** Color-management software has a capable engine, but it's not the complete color management system Agfa touts. Invisible tech support and poor documentation were only part of the problem. **Apr 94**

★★★★ **FrameMaker 4.0, Frame Technology Corp., 408/433-3311, $895.** For such projects as long, structured documents—books, instruction manuals, and textbooks—this desktop publishing program is one of the best tools available. It's fast, well mannered, and a real time-saver. **Mar 94**

★★★ **Kodak ColorSense 1.0, Eastman Kodak, 716/253-0740, $499.** Color-management system gives average users access to a reasonable level of color consistency at a reasonable price. It does not make color separations. **Oct 93**

★★★★ **Print Shop Deluxe, Broderbund Software, 415/382-4400, $50.** Even the most ham-fingered can create professional-looking greeting cards, signs, banners, letterhead stationery and calendars with these desktop publishing templates and graphics. While it's not a substitute for a high-end program, it is easy to use and inexpensive. **Apr 94**

★★★★ **QuarkXPress 3.2, Quark, 303/894-8888, $895.** This upgrade adds the EfiColor XTension to ensure the greatest possible fidelity of color images and is a must-have for professional color publishers who use Quark. For others, the enhancements are welcome but minor enough that they provide little incentive to upgrade. **Nov 93**

★★★★ **Tableworks Plus 1.05, Npath, 206/392-7745, $299.** Publishing utility adds a full table-editor to QuarkXPress and is a must-have for anyone doing even mildly complex tables. **Jan 94**

EDUCATION

★★★ **The Cruncher, Davidson & Associates, 310/793-0600, $59.95.** If you want to teach a child spreadsheet basics, this combination educational spreadsheet and business application will do the job. It's creative and easy to use, but slow. **Aug 94**

★★★★ **Grolier Multimedia Encyclopedia, Grolier Electronic Publishing, 203/797-3530, $395.** CD-ROM encyclopedia has excellent search capabilities, weighs much less than a shelf of books, and is lots of fun. Its timeliness and some hierarchical snafus were slight problems. **Jul 94**

★★★★ **How Computers Work, Time Warner Interactive Group, 818/955-9999, $79.99.** Graceful, well-integrated CD-ROM tutorial guides the curious through brief but helpful explanations of basic computer technologies. **Jan 94**

★★★ **HyperStudio, Roger Wagner Publishing, 619/442-0522, $179.95.** Hypermedia authoring tool supports color and many multimedia functions through easy-to-use dialog boxes, but the interface doesn't always follow Apple guidelines. **Dec 93**

★★★ **MacGrade 1.5.5, CalEd Software, 800/795-0641, $85 to $245.** Grade-book program has a straightforward, simple interface and clear documentation. Although there's room for improvement, it's easy to use and flexible. **Feb 94**

★★★★ **The Rosetta Stone, Fairfield Language Technologies, 703/432-6166, $395.** Foreign-language instruction on CD-ROM is a valuable educational tool and fun to use. The lessons are well paced, and the content is generally excellent and diverse. **Jan 94**

★★★ **Small Blue Planet 1.2.1, Now What Software, 415/885-1689, $79.95.** Nicely integrated collection of beautiful Earth-from-space images on CD-ROM lacks many features of standard atlases and doesn't have a search function, but is endlessly fascinating. **Jul 94**

ENTERTAINMENT

★★★ **BlackJack Trainer, ConJelCo, 412/492-9210, $75.** Learn the strategies you need to win at blackjack with this program. There are a number of trivial bugs, but they won't get in the way. **Oct 93**

★★★★ **Crystal Crazy, Casady & Greene, 408/484-9228, $49.95.** Ultraglossy, superpolished version of the classic Crystal Quest is challenging and fun without being overly difficult. Each level of play retains some old elements, and adds some new ones to keep you on your toes. **Jun 94**

★★★ **Daily Sports Quiz 1.0, DreamTime, 619/236-1341, $49.95.** If you think you know a lot about sports and love to play trivia games, then this entertaining and informative game is for you. **Oct 93**

★★★★ **Falcon MC 1.0, Spectrum HoloByte, 510/522-1164, $69.95.** Whether you're an armchair jet jockey or an experienced fighter pilot, you're bound to be impressed by the 4-bit color, enhanced graphics, and sophistication of this latest incarnation of the original Macintosh combat flight simulator. **Dec 93**

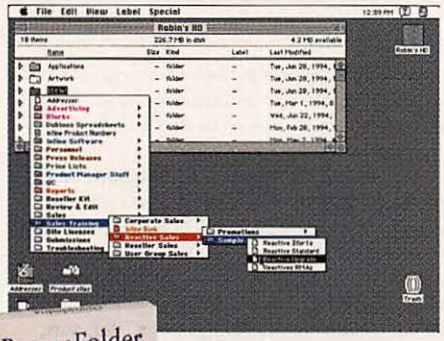
★★★ **Firefall Arcade, Inline Software, 203/435-4995, $49.95.** If you loved the classic video game Centipede, or are just looking for a fun shoot-'em-up, this arcade-style game will satisfy. **Jun 94**

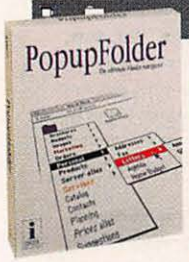
★★★ **Hell Cab 1.0.1, Time Warner Interactive Group, 818/955-9999, $99.99.** Take a diabolical New York cabbie with a penchant for time travel, toss in the Empire State Building, add a few brainteasers, and you've got this engaging game on CD-ROM. It's slow and the arcade sections are hard to control, but overall it succeeds. **Jan 94**

★★★ **Indiana Jones and the Fate of Atlantis, LucasArts Games, 415/721-3394, $59.95.** In this game, the whip-wielding archaeologist goes looking for

continues

WORK HARD.

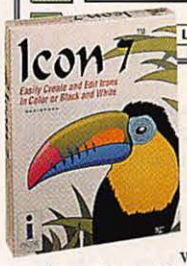




Get Where You Need To Be.

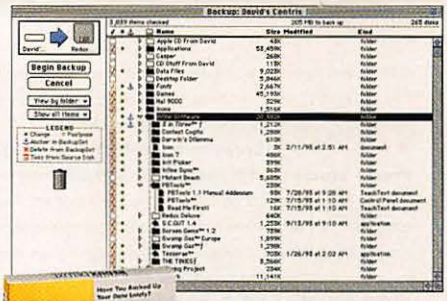
MacUser called PopupFolder "absolutely spectacular" and said "it quickly becomes second nature"! Why waste your time double-clicking through folders when you could be working already? Hold down the mouse button on any folder anywhere and use the popup menu to open or move any file!

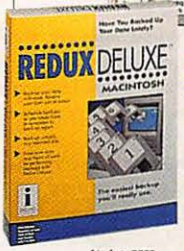




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PLAY HARD.





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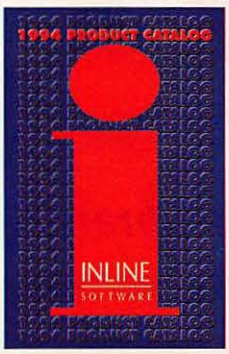
Okay, Stormlord — the evil minions of Tnarom have invaded your beloved Llyn Cerrig homeland. Will you stand by as the fairies are destroyed? If you're into rich side-scrolling graphics, fantastic sound effects, and axe-wielding Norsemen heroes, you gotta get Deliverance.





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Don't feel pressured, but your first mission could be your last. Firefall Arcade's ferocious fireworms and powerful enemy weapons want to eat you for lunch; fortunately, you're sharp enough (we hope) to snatch the powerups that give your ship the edge. There's arcade style 3-D rendered animation and a cool soundtrack to top it all off.



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Star Ratings

Atlantis and finds it armed to the gills with magical technology and Nazi stooges. If you're not bothered by the story's astonishing sexism, you'll find it diverting. **Oct 93**

★★★ **The Journeyman Project 1.0 (1.2), Presto Studios, 619/689-4895, $79.95.** Interactive science-fiction epic on CD-ROM is a work of art. The scenes are rich with painstakingly detailed graphics, elaborate models, and subtle textures, but the sluggish pace may leave you impatient and bored. **Sep 93**

★★★★ **Myst 1.0, Broderbund Software, 415/382-4400, $59.95.** The smooth pacing of actions and sounds in this beautiful CD-ROM game give it a dreamlike quality. This is a game that's been polished until it shines. **Mar 94**

★★★★ **Seven Days in August, Time Warner Interactive Group, 818/955-9999, $59.99.** Compelling, interactive documentary on CD-ROM cuts a slice from history and offers August 10 through August 16, 1961 (the building of the Berlin Wall), to viewers in a way that truly evokes the period. **Oct 93**

★★★★ **SimCity 2000, Maxis Software, 510/254-9700, $69.95.** In essence, your goal with this marvelous city-simulation software is to build a city and run it successfully. The game is fascinatingly complex, but it's simple to use, and the elaborate graphics are so lovely that it's even fun just to watch. **Jun 94**

★★★★ **Spectre Supreme, Velocity Development, 415/274-8840, $69.95 to $89.95.** The pleasure of this game comes not in high scores, but in the almost addictive sense of control you get from moving your tank around the screen. It's so much fun that it's even fun when you lose. **Dec 93**

★★★★ **Spin Doctor, Callisto Corp., 508/655-0707, $59.95.** In the tradition of the best Macintosh games, this game tests your wits and reflexes alike. It's part strategy game, part kinetic sculpture. **Jun 94**

★★★ **V for Victory: Utah Beach, Three-Sixty Pacific, 408/879-9144, ext. 23, $69.95.** The post–D-Day conquest of Normandy is re-created in this game; its strength is the way it blends easy play with complicated strategy. Some bugs exist. **Oct 93**

FINANCE/ACCOUNTING

★★★★ **Andrew Tobias' TaxCut 1993, MECA Software, 203/255-1441, $79.95.** The free-form approach and flexible Help menus of this tax-preparation software make filling out your tax return a smooth, almost relaxing process. The only state versions available are California and New York. **Apr 94**

★★★ **ExpensePlus 1.0.1, State of the Art, 714/753-1222, $139.95 to $159.95.** Software uses a Newton MessagePad to record expenses, then sends the data to a Mac to create and print expense reports. While it's a real time-saver, you'll need AppleScript expertise to modify the expense reports. **Apr 94**

★★ **Financial Competence 1.5, Competence Software, 603/435-5098, $99.** Business economics tutorial explains how financial statements are compiled and how they relate to each other, but you could learn the same things from a book, faster and for less money. And that might be the more financially competent thing to do. **Jul 94**

★★★★ **MacInTax 1993, ChipSoft, 602/295-3110, $69.95.** Tax-preparation software provides a reasonably detailed manual and a reliable, structured interface for building your tax return. Its inability to accept figures containing amounts in cents or round off to whole dollar amounts will frustrate some users. **Apr 94**

★★★ **MacInTax Tax Planner, ChipSoft, 602/295-3110, $19.95.** Software allows you to construct a five-year forecast of your tax liability, projecting tax figures through 1997 in a concise summary format. If you have a tax preparation program, you can do the same thing by creating alternative tax returns. **Apr 94**

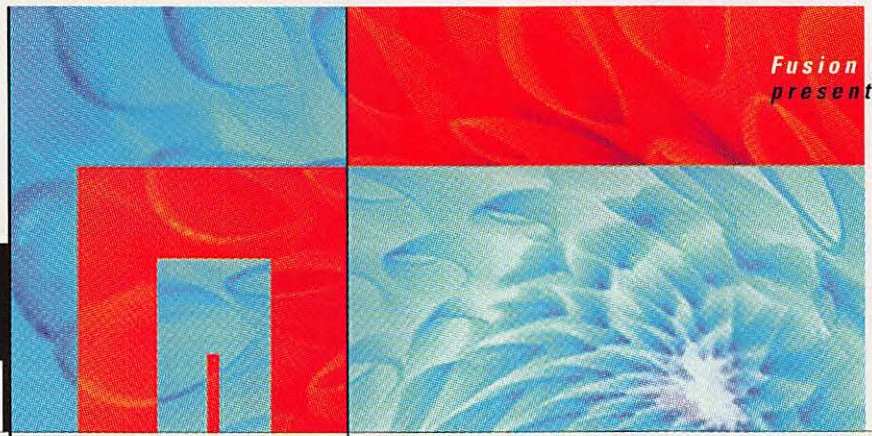
★★★ **MacInTax Tax Savings Guide, ChipSoft, 602/295-3110, $19.95.** Simple, straightforward collection of well-written, fully indexed tax tips and suggestions is designed to help you better understand your tax return and reduce your tax liability. Although strong in content, it doesn't allow you to copy and paste, export as a text file, or even print. **Apr 94**

★★★ **MacMoney 4.01, Survivor Software, 310/410-9527, $89.95.** Personal-finance software has new and improved features that will please longtime users, but it hasn't kept up with the leaders in the field and won't win many new converts. **Jul 94**

★★★ **Managing Your Money 6.0, Meca Software, 800/820-7457, $79.95.** Personal-finance program does a good if somewhat roundabout job of keeping track of your total financial picture. Although it isn't as easy to use as the competition, it excels in tax, investment, and financial planning. **Jun 94**

★★★★ **Quicken 4, Intuit, 415/858-6095, $69.95.** Personal-finance software is powerful and easy to learn, even for a financial neophyte. Although slower

continues



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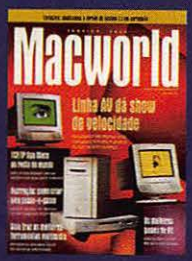
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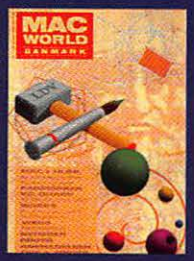
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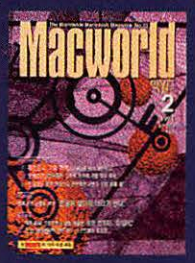
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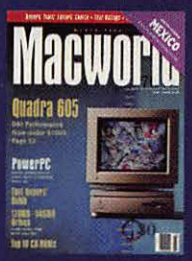
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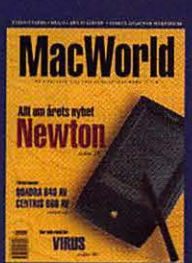
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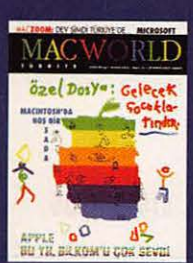
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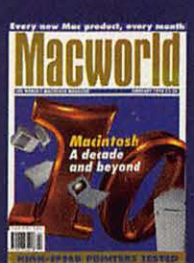
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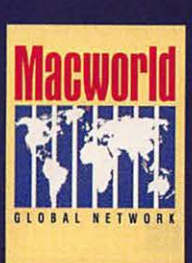
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United Kingdom



United States



Star Ratings

than previous versions, 4.0 lives up to its promise of making financial chores easier and better organized. **Nov 93**

GRAPHICS

★★★★ **Adobe Illustrator 5.0, Adobe Systems, 415/961-4400, $595.** The Mac's most dependable draw program has added enough new features to boggle the mind. It still can't import TIFF images, but it catches up with, and in some areas surpasses, the competition. **Nov 93**

★★★★ **Aldus FreeHand 4.0, Aldus Corp., 206/622-5500, $595.** The new page-design and text-editing functions of this powerful draw program make it more than worth the price of admission. Aside from some bewildering interface elements, it's an outstanding program. **Mar 94**

★★ **BrushStrokes 1.0, Claris Clear Choice, 408/727-8227, $139.** If you have absolutely no experience with computer graphics, the simplified interface of this 24-bit paint program might warrant its price. Otherwise, you can find better programs for less. **Oct 93**

★★★ **CA-Cricket Draw III 2.0 (2.01), Computer Associates International, 516/342-5224, $249.** This draw program is not going to inspire experienced Mac artists to jump up and down, but its features are abundant, the interface is straightforward, and the price is right. **Oct 93**

★★★ **Canvas 3.5, Deneba Software, 305/596-5644, $399.** Draw program offers two to three times as many features as any competing program, but our reviewer would prefer an interface that you can navigate without scrambling for the manual. **Jan 94**

★★★ **Collage 1.0.1, Specular International, 413/253-3100, $349.** Image-compositing software is a flawed but serviceable tool that allows you to combine and composite multiple RGB images stored in PICT, TIFF, and Photoshop 2.5 formats. While it's functional and indisputably easy to use, its oversights, including slow screen redraw with no interrupt option, are nearly as numerous as its benefits. **Jul 94**

★★ **ColorUp 1.0, Pantone, 201/935-5500, $99.95.** Professional graphic designers don't need the advice of this color tutorial and series of palettes. Although nonprofessionals might benefit from the information on color theory, it may not be worth the money. **Nov 93**

★★★★ **DeBabelizer 1.5 (1.5.5), Equilibrium Technologies, 415/332-4343, $299.** Bitmapped-graphics-conversion software supports a huge number of file formats and can work wonders. If you spend any significant time dealing with file conversion, you should have this program. **Nov 93**

★★★★ **DeBabelizer Lite 1.0, Equilibrium Technologies, 415/332-4343, $129.** Terrific graphics utility converts graphics files from one format to another. It offers a choice selection of capabilities at a nice, slim price. **Aug 94**

★★★ **DesignWorkshop 1.0 (1.1), Artifice, 503/345-7421, $895.** The accessible interface and versatile modeling environment of this 3-D modeling software may be worth the fairly high price, particularly for architectural-design conceptualization. **May 94**

★★★ **Generic CADD 2.0, Autodesk, 206/487-2233, $495.** Competent, midlevel 2-D drafting program has a well-executed Mac interface, a good complement of tools, and a sprinkling of high-end features, such as floating-point precision. **Aug 93**

★★★ **Infini-D 2.5.1, Specular International, 413/253-3100, $695.** Serviceable 3-D graphics program has a wide range of modeling, rendering, and animation options, with a straightforward interface and quick operating speed. **Feb 94**

★★★★★ **Kai's Power Tools 2.0a, HSC Software, 310/392-8441, $199.** Phenomenally powerful suite of Photoshop plug-ins have an addictive quality typically associated with arcade games. There's no end to the automated effects you can generate, the ways you can apply them, and the artwork you can create. **May 94**

★★★ **Koyn Fractal Studio 2.02, Koyn Software, 314/878-9125, $149.95.** Software lets you generate beautiful fractals of your own design. It's a reasonable choice if you are interested in Sierpinski triangles or naturalistic forms, but it's not an all-fractals-for-all-people program. **Aug 94**

★★★★ **MacroModel, Macromedia, 415/252-2000, $1495.** This 3-D modeling software is a solid resource to have along when you venture out into 3-D space. The interface is elegantly simple, making the Mac's inner space a more pleasant place to work. **May 94**

★★★★ **MetaFlo', The VALIS Group, 415/435-5404, $595.** Graphics utility yields interesting visual effects with a minimum of fuss. It imparts elasticity to 2-D images, letting you push and pull collections of pixels while retaining the visual integrity of the image. **Aug 94**

★★★★ **Paint Alchemy 1.0, Xaos Tools, 415/487-7000, $99.** For the price, these plug-in graphics

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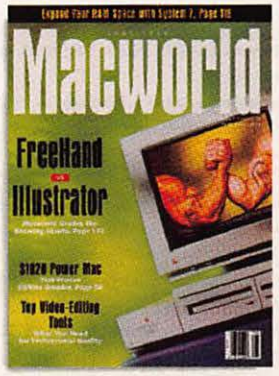


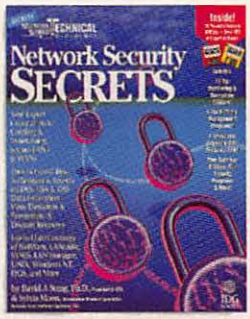
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Best News Story in a Computer Publication ("DOS 6.0" by Stuart Johnson, Doug Barney and Kevin Strehlo)

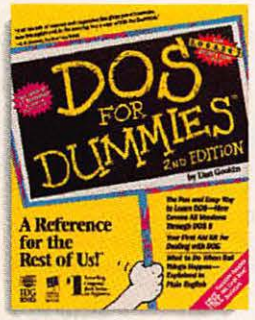


Best Computer Columnist (Deborah Branscum, "Conspicuous Consumer")





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effects are a tremendous value that both casual users and professional artists can use to design a little chaos into their work. May 94

★★★ **Pointillist, Pictor GraFX, 310/865-0495, $39.95.** Stereogram software creates images that look, at first glance, like random dots, but as you focus beyond the page, a 3-D image emerges from the pattern and appears to hover inches in front of the background. It's gleefully wacky. Jul 94

★★★★ **PowerDraw 4.0 (5.0), Engineered Software, 910/299-4843, $795.** The best new feature of this polished 2-D drafting program is an open architecture that supports modules that let you customize the program with application-specific tools, floating palettes, and menu commands. Sep 93

★★ **Ray Dream Designer 3.0.3, Ray Dream, 415/960-0768, $349.** Although this 3-D–illustration software remains a price leader, unstable operation, misbehaving features, and sluggish performace are problems that need to be rectified. Jul 94

★★★★ **Scenery Animator 1.0.4, Natural Graphics, 916/624-1436, $149.** Landscape rendering and animation software uses U.S. Geographical Survey data to create remarkably realistic 3-D representations of terrain. Its flaws are few, and our reviewer recommends it. Aug 94

★★★★ **Showplace 2.0, Pixar, 510/236-4000, $495 to 695.** Adequate, entry-level, 3-D modeler is suitable for illustration and other graphic arts applications. This version offers improved access to MacRenderMan, one of the best renderers around, plus plug-in modeling tools. Apr 94

★★★ **StrataVision 3d 2.6.3, Strata, 801/628-5218, $995.** 3-D program includes animation, and is a superior rendering tool and versatile modeler. It's a challenge to learn, however, as the interface is overly dense and sometimes sluggish. Feb 94

★★★★ **StudioPro 1.0, Strata, 801/628-5218, $1495.** If you need a well-balanced, all-in-one 3-D modeling, rendering, and animation solution, this application is an excellent choice. Mar 94

★★★ **Transverter Pro 1.0 (1.51), TechPool, 216/291-1922, $395.** Remarkable graphics-conversion software can read PostScript files and convert them to a variety of formats. As you might expect of a program that attempts to fill such a tall order, its conversions are not always flawless, but it can be a lifesaver nonetheless. Nov 93

★★★ **Typestry 2.0, Pixar, 510/236-4000, $299.** An approachable interface, animation support, and outstanding Renderman rendering technology make this 3-D type-renderer a popular choice. This version improves on the original, but still lacks canned positioning effects. Jun 94

★★★ **upFront 2.0, Alias Research, 416/362-9181, $299.** Capable modeler is something of an acquired taste. However, take the time to learn it and you'll find useful, if unconventional and demanding, tools that are well suited for architectural modeling. Jan 94

MATH/SCIENCE

★★★ **Alchemy III, Tripos Associates, 314/647-1099, $950.** Molecular-modeling software can model decapeptides and DNA fragments, in addition to the expected small molecules, with refreshing alacrity on a Mac IIci or better. Sep 93

★★★★ **Caduceus Science Review Macintosh Project 1.0, Scientia, 617/776-3427, $150 to $250.** If you're taking the MCAT, you'd be nuts not to buy this interactive science review. With proper use, its 9MB of files are certain to improve your score. Apr 94

★★★★ **CSC ChemOffice 2.0, Cambridge Scientific Computing, 617/491-6862, $995 to $1595.** Comprehensive chemistry software is the Mac equivalent of software that seven years ago would have cost $200,000 and required an equally costly minicomputer. It's a winner. Feb 94

★★★ **f(z) 6, Lascaux Graphics, 602/299-0661, $115.** The main problem this math software attacks is four-dimensional visualization. It costs slightly more than a textbook, making it a great educational bargain. Sep 93

★★★ **InStat 2.01, GraphPad Software, 619/457-3909, $95.** For scientists who have limited statistics backgrounds, the chatty clarity of this lab-oriented statistics software's help screens will be invaluable, while the limited variables and minimal graphics won't be a problem. Nov 93

★★★★ **LabView for Mac 3.0.1, National Instruments, 512/338-9119, $1995.** For large-scale, demanding projects in data acquisition and analysis, this scientific software is an unchallenged standard, in a class by itself. Jul 94

★★★★ **Mathematica 2.2, Wolfram Research, 217/398-0700, $595.** The one essential program in science and mathematics adds a function browser that makes the program as easy to use as it should be, as well as improvements to computational routines. Sep 93

★★★ **QC Tools 1.0, Abacus Concepts, 510/540-1949, $245.** Quality-control tool kit for StatView appears to introduce a slight slowdown in program response, but is generally well designed, well documented, and suitable for quality-control neophytes as well as professionals. Jan 94

★★★★ **Resampling Stats 1.0, Resampling Stats, Inc., 703/522-2713, $225.** Innovative statistics software has proved itself to be a superior teaching tool in numerous classroom tests. If you have any interest in statistics, you should give this admirably straightforward approach careful consideration. Jun 94

★★★★ **SerePlot 2.12, Scientfic Visions, 301/593-0317, $135.** If you have piles of data and don't need animated, exploding bar-charts in 24-bit color, this scriptable plotting software should be part of your analysis tool kit. Jun 94

★★★ **Spyglass Transform 3.0 (3.01), Spyglass, 217/355-6000, $595.** Scientific-visualization software can access data stored in every common format, offers some useful presentation-graphics features, and includes a programming language with a large range of built-in, high-level scientific functions. Sep 93

★★★★ **StatView 4.01 (4.02), Abacus Concepts, 510/540-1949, $595.** If your work uses statistics for decision support rather than abstract analysis, and you regularly have to present your results to non-statisticians, this is the statistics package for you. Oct 93

★★★ **Sum Total 1.01, Concurrent Engineering Tools, 602/464-8208, $99.95.** Exceptional calculator utility is packed with advanced features, including a mode that lets you sample colors and use the numerical color values in calculations. The convenient palette approach causes a distinct time-lag in menu operations. Oct 93

★★★★ **Turing's World 3.0, CSLI Publications, 312/568-1550, $19.95.** Computer-science educational software lets you investigate some fundamentals in computing at an almost unbelievable bargain price. Feb 94

★★★★ **Visualization of Natural Phenomena, Telos/Springer Verlag, 408/249-9314, $59.95.** CD-ROM introduction to applying all aspects of computer graphics to scientific imaging covers all disciplines and offers definitive analysis of methods. No other source covers this much material, at this level of clarity. Jan 94

ORGANIZATION/PRODUCTIVITY

★★★★ **Arrange 1.1, Common Knowledge, 415/325-9900, $349.** This personal information database's flexible, intuitive approach to data-handling makes it an excellent tool for storing all kinds of day-to-day information. May 94

★★★★ **CalendarMaker 4.0, CE Software, 515/224-1995, $59.95.** Polished, intuitive calendar-making program is straightforward, with a variety of options for customizing your calendar. Some features can be cumbersome. Oct 93

★★ **ClienTrac 1.7.1 (1.7.2), Whiskey Hill Software, 415/851-8702, $135.** Easy-to-use, HyperCard-based contact-management software performs as billed, but fails to inspire much enthusiasm. Aug 93

★★★ **Contact Ease 2.0.1 (2.0.2), WestWare, 619/274-5053, $395 to $1495.** Contact-management and sales-automation software helps salespeople keep in touch with contacts, makes it easy to generate letters, and maintains detailed records of activities. It has a few quirks but is overall a good program. Aug 93

★★★★ **DateBook and TouchBase Pro Bundle, Aldus Corp. Consumer Division, 619/558-6000, $149.95.** Calendar and contact manager offer a superior combination of integration, usefulness, and features. If you want to get organized, make sure you look at this dynamic duo. Feb 94

★★★ **DateView 1.0.1, Advanced Software, 408/733-0745, $99.95.** If you're willing to sacrifice some features to get simplicity and speed, this calendar/to-do manager makes sense. It integrates with InTouch contact manager. Aug 94

★★★ **Full Contact 2.01, FIT Software, 408/562-5990, $169.** Personal information manager can handle, with speed and style, tasks that would choke other products, but frequently, using it feels like a full-time job. Aug 94

★★★★ **In Control 2.0, Attain Corp., 617/776-1110, $89.95.** The best features of an outlining program are combined with those of a database, making it easy to sort, search, organize, and print your to-do list. Aug 93

★★★ **Now Contact 1.0 (1.0.1), Now Software, 503/274-2899, $99.** This contact manager has some innovative features and could easily become the top address-book program for the Mac by adding some features such as file reconciliation. Mar 94

★★★ **Power Team 1.0, ProVue Development Corp., 714/892-8199, $149.95.** Personal information manager consists of seven modules: Phone Book, Calendar, Correspondence, Checkbook, Calculator, Expense Report, and Mailing List. It has some bugs, but the data entry features are excellent. Oct 93

★★ **Rae Assist 1.0.2, Rae Technology, 408/725-2850, $199.** Although this personal information manager offers some fresh ideas, including automatic linking of company and contact information, it's too big and too slow. Jan 94

★★★ **TimeSquare 1.0, Team Building Technologies, 514/278-3010, $149.** Fast, flexible, network calendar program has lots of handy features, but it's missing a few as well, such as multiday events and label grouping. Aug 94

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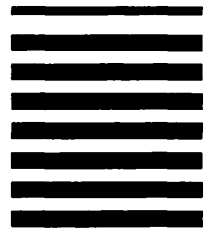
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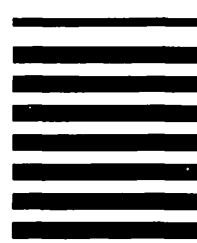
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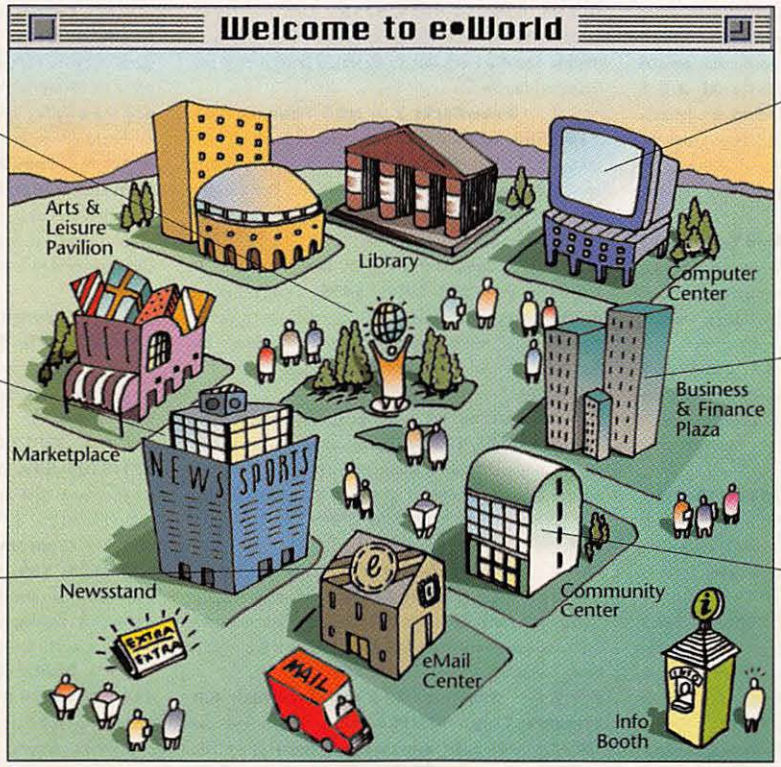
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Star Ratings

PRESENTATION TOOLS

★★★★ **Adobe Premiere 3.0, Adobe Systems, 415/961-4400, $695.** Solid and dependable QuickTime video-editing software offers a structured, responsive, and flexible interface with enhancements that range from the mundane to the dramatic. It can now mix 99 tracks. Jan 94

★★★★ **Astound 1.0, Gold Disk, 408/982-0200, $399.** Presentation software lets you include sound, text, and graphics animation with no more effort than pasting in a chart in other products. It's a good value. Nov 93

★★★★ **Authorware Professional 2.0.1, Macromedia, 415/252-2000, $4995.** Multimedia-scripting and -presentation software lets you develop complex presentations with amazing speed. Although expensive, it's wonderfully done and will pay for itself in time saved. Feb 94

★★★ **Avid VideoShop 2.0, Avid Technology, 508/640-6789, $499.** QuickTime video-editing program shines in its intuitive, easy-to-use interface, although it may fall short on features for hard-core video professionals. Feb 94

★★★★ **CoSA After Effects 1.1, CoSA, 401/831-2672, $1295.** QuickTime movie editor blurs the boundaries between animation and traditional video-editing. It produces results that simply can't be created in other packages. Oct 93

★★★ **Deck II 2.1, OSC, 415/252-0460, $399.** AV Macs turn into digital-audio workstations with this software that enables you to record, mix, modify, and play back CD-quality sound. It doesn't include equalization features. Jun 94

★★ **Elastic Reality 1.0, ASDG, 608/273-6585, $349.** Exciting morphing tool can create professional-caliber results—if you can figure out how to use it. The needlessly convoluted interface, poor documentation, and inadequate tech support make that a difficult task. Feb 94

★★★★ **FlipBook 1.0, S. H. Pierce, 617/338-2222, $89.** Animation printing utility lets users make flip-books (consisting of a series of printed images that, through application of an extremely technical thumb-and-forefinger method, appear to move) out of QuickTime movies, PICS animations, and Scrapbook files. Jun 94

★★★★ **Morph 2.0, Gryphon Software, 619/454-6836, $239.** Easy to use morphing software is beautifully designed, with delightful new features, including the ability to morph QuickTime movies. Using it is as painless as morphing gets. Apr 94

★★★ **Passport Producer Pro 1.0, Passport Designs, 415/726-0280, $995.** Superb, albeit quite expensive, media-integration package makes assembling even complex presentations surprisingly easy. Path animation is limited to entrances and exits. Apr 94

★★★ **QuickFlix 1.0, VideoFusion, 419/891-1090, $149.** Approachable QuickTime moviemaking software lacks the high-end features of other programs but costs a whole lot less. Feb 94

★★★★ **Working Model 1.0, Knowledge Revolution, 415/553-8153, $995.** Animators and engineers will love this terrific motion simulator that mimics real motion by applying physical laws to objects. It's easy to learn and use, but you'll need some understanding of math and physics. Oct 93

PROGRAMMING

★★★ **CLImate 1.0, Orchard Software, 617/876-4608, $59.95.** With a little more documentation and a few more sample programs, this utility that provides a subset of Unix-like commands for the Mac environment could be an irresistable package. Oct 93

★★★ **Macintosh Common Lisp 2.0 (2.0.1), APDA, 716/871-6555, $495.** Anyone who likes programming in LISP will be pleased with the environment provided by this version of the standard dialect and its extensive debugging and interface-building facilities. Oct 93

★★★★ **Object Master for Think C and C++, ACI US, 408/252-4444, $255.** Object-oriented development environment is full of goodies and will pay for itself in about a week due to increased programmer productivity. Apr 94

★★★ **PowerPacks 2.0, NDG Phoenix, 301/718-8880, $225.** Programmers' tool kit for 4th Dimension provides 280 external procedures to improve custom applications and exploit System 7 features. Don't expect any quick fixes for 4D's less-than-blistering performance in most areas, though. Oct 93

★★★★ **Smalltalk/V for Macintosh 2.0, Digitalk, 714/513-3000, $495.** Object-oriented development system is now even more viable for commercial projects, while Digitalk's customer support and documentation set a standard other vendors should emulate. Feb 94

★★★ **SoftPolish 1.1, Language Systems Corp., 703/478-0181, $295.** Program-quality-assurance utility systematically checks the resources in a program's interface against a huge laundry list of errors. It's a programming tool for anyone who hopes to produce a commercial Mac application. Sep 93

★★★ **SourceSafe 2.1, One Tree Software, 919/821-2300, $295 to $1195.** Solid, relatively easy-to-use product handles program-development administrative tasks, including version control, for multiplatform programs being created by groups. Sep 93

★★★★ **Symantec C++ for Macintosh 6.0, Symantec Corp., 408/253-9600, $499.** If you like Think C, you'll like this software-development system, too. For the Mac, it's an excellent opportunity to catch a new wave in programming. Nov 93

★★★ **VIP BASIC 1.0.1, Mainstay, 805/484-9400, $295.** Popular programming language lets programmers who know only BASIC get started producing real, if interpreted, Mac programs. It's a serious developer's tool, though it's not on the same footing as VIP-C. Jun 94

★★★★ **VIP-C 1.0.1, Mainstay, 805/484-9400, $495.** If you've mastered the rudiments of C, this programming-code generator will let you code about ten times faster than you could using only an editor. Its real strength is in rapidly assembling smaller projects. May 94

UTILITIES

★★★ **AppleSearch 1.0, Apple Computer, 408/996-1010, $1799.** Although it has some rough edges, this product for archiving and retrieving text is highly useful. It presents retrieved information clearly and extracts text from documents in many formats. May 94

★★★ **Atticus Vista 1.0, Atticus Software Corp., 203/348-6100, $69.95.** Control panel and application automatically catalog the disks you mount on the desktop. It has a few problems, including limited search options, but it can help bring order to disorganized disk collections. May 94

★★★★ **Automap Road Atlas for Macintosh 2.01 (2.04), Automap, 206/455-3552, $99.95.** Mapping software tells you how to get where you're going better than any other map, atlas, or software our reviewer has seen. Although screen redraw is slow, it's worth it for the written directions and maps the program has to offer. Jul 94

★★★★ **CD-ROM ToolKit 1.0.5, FWB, 415/474-8055, $79.** Software accelerator can halve the time it takes to open files and search on a CD-ROM. The product supports a wide variety of formats and CD-ROM drives, but users should be aware that playback of QuickTime movies is often uneven. May 94

★★★ **Connectix Desktop Utilities 1.0 (1.0.1), Connectix Corp., 415/571-5100, $99.** Although some of the 16 utilities offered in this package are more at home on a PowerBook, this collection offers one-stop shopping at a low price. It's worth it for the file-synchronization, Keyboard Power, and Hot Keys features alone. Nov 93

★★★★ **CopyDoubler 2.0 (2.0.1), Symantec/Fifth Generation Systems, 504/291-7221, $59.** This utility speeds up copying, lets you queue jobs for background copying, and offers a variety of other useful, copying-oriented features—all at a very reasonable price. Nov 93

★★★ **Copyright Pro 1.0.3, CSG Technologies, 412/471-7170, $79.** Utility takes over the Finder's copying function, copies in the background, and allows you to regularly schedule copying. It doesn't speed up copying, however. Nov 93

★★★★ **CPU 2.0 (2.0.1), Connectix Corp., 415/571-5100, $99.** Reasonably priced collection of utilities for the PowerBook adds new features, including file synchronization, that easily justify the upgrade price. Sep 93

★★★ **CryptoMactic 1.0.1, Kent Marsh, 713/522-5625, $99.** Security software offers fast Finder-level encryption and decryption with effective file removal. Although its simplest encryption algorithm isn't quite hacker-proof, it's worth considering. Feb 94

★★★ **DiskDoubler 4.0, Symantec Corp., 503/334-6054, $79.95.** In pure efficiency terms, this file-compression software is a winner, but it lacks many features of previous versions, including passwords on self-extracting files and automatic recompression. Aug 94

★★★★ **DiskLock PB 1.0, Symantec/Fifth Generation Systems, 504/291-7221, $59.** PowerBook security software balances robust security with simplicity and ease of use. It's much harder to crack than most PowerBook utility collections' security features, and will keep out all but the most determined. Jan 94

★★★★ **DiskTop 4.5, PrairieSoft, 515/225-3720, $99.95.** Organizing a crammed hard drive is a more manageable task with this simple but powerful file-management utility that lets you copy, move, rename, delete, and find files—without using the Finder. Jul 94

★★★ **The Disney Collection Screen Saver, Berkeley Systems, 510/540-5535, $49.95.** Mickey, Goofy, Peter Pan, Ariel, and other Disney favorites cavort around your screen with this screen saver that includes 16 different modules. Mar 94

★★★ **DriveShare 1.03, Casa Blanca Works, 415/461-2227, $129.95.** This utility allows users to share a removable drive over a network. It's most useful if your network consists of both System 6 and System 7 users, as its advantages over System 7 file sharing are slight. Nov 93

★ **DriveTech 1.0, MicroMat Computer Systems, 415/898-6227, $59.95.** Without decent documentation or clearer error messages, this floppy-drive cleaning and diagnostic program is essentially a $60 floppy-drive cleaning kit. Since you can buy a cleaning kit without software for $10, that makes it a bad deal. Jan 94

★★★ **DupLocator 1.03, Midnight Software, 303/933-1013, $99.** For new Macintosh users who

don't have a general file utility, this software that locates duplicate files, as well as performs basic file commands such as moving and renaming files, may be useful. **Jan 94**

★ **eDisk 1.0 (1.2), Alysis Software Corp., 415/566-2263, $149.95.** Driver-level compression software has little to recommend it over file-level, idle-time compression programs. The biggest drawback is the strong potential for disk or file corruption. **Oct 93**

★★★ **Icon 7, Inline Software, 203/435-4995, $79.95.** Simple, straightforward utility has a streamlined and intuitive library feature for storing and retrieving icons, plus tools for icon editing. Its icon collection, however, is pretty paltry. **Sep 93**

★★★ **Icon-It Pro 3.0.6, Olduvai Corp., 305/670-1112, $129.** Utility allows you to attach custom tool bars to almost any application, including the Finder. The interface is quirky, but you get used to it. **Dec 93**

★★★★ **Icon Mania 1.0, Dubl-Click Software, 818/888-2068, $69.95.** Delightful icon-editing utility comes with terrific tools for building new icons, including an outstanding thumbnail feature that builds custom icons from graphics files. **Aug 94**

★★★ **I Like Icon 1.0, Baseline Publishing, 901/682-9676, $59.95.** Glitzy utility has tools for icon editing, has a nice library of icons, and can create animated icons. Some basic features, such as a text tool, are missing, and the animated icons are fun but impractical. **Sep 93**

★★★ **MacPak 1.0, Symantec/Fifth Generation Systems, 504/291-7221, $149.** The quality of this utility collection is uneven—some modules are unpolished—but if you don't already own AutoDoubler, CopyDoubler, and a good file-management program, it's worth the price. **Jan 94**

★★★★ **MacTools 3.0, Central Point Software, 503/690-8090, $149.** Recovering trashed files is a snap with this utility package that fixes more disk problems than its competition. It includes disk-and-file maintenance, disk repair, virus protection, and backup. **Mar 94**

★★ **Magic Typist 2.0, Olduvai Corp., 305/670-1112, $129.** If you want to speed up typing of repetitive phrases or if you don't have full use of your hands, this utility, which automates typing of repetitive phrases, may be useful, but some functions work erratically or not at all in Microsoft Word. **Sep 93**

★★★★ **Mr. File 2.0, Softways, 408/978-9167, $99.** The well-designed background capabilities of this Finder utility make it a handy tool for copying, finding, moving, launching, and renaming files, although it has a few interface quirks. **Dec 93**

★★★ **Now Compress 1.0 (1.0.1), Now Software, 503/274-2899, $69.** Compression utility holds its own in a crowded market; it's easy to use, it's complete, and it compresses as well as or better than other options. **Dec 93**

★★★ **Now Fun, Now Software, 503/274-2899, $45.** Five control panels let you liven up your Mac by customizing everything from menu colors to system sounds. The included screen-saver modules and desktop patterns and pictures are fairly limited, though. **Dec 93**

★★★★ **Now Utilities 4.0.1 (4.0.2), Now Software, 503/274-2899, $129.** Many thoughtful improvements have been added to this collection of utilities, which is now better integrated, more logically designed, and still an excellent deal for your dollar. The new scrapbook feature, however, is awkward and inconvenient. **Aug 93**

★★★ **Open Sesame 1.02 (1.1), Charles River Analytics, 617/491-3474, $99.** Utility automates Finder operations, such as opening and closing files, without resorting to macros or scripts. It has an elegant interface, but people with strict work habits are more likely to find its suggestions worthwhile than are those who don't follow a routine. **May 94**

★★★ **OptiMem 1.4.1, Jump Development Group, 412/681-2692, $129.** Systemwide memory manager monitors RAM use and allocates RAM where it's needed. Works best with software that handles minimum-memory situations effectively. **Mar 94**

★★★ **PopupFolder, Inline Software, 203/435-4995, $59.95.** Finder utility is so handy and easy to use, you wonder why it isn't built into the Mac's system software. On the other hand, it's sluggish when readying pop-up menus for every folder. **Aug 94**

★★★★ **PowerMerge 2.0, Leader Technologies, 714/757-1787, $129.** Powerful file-management tool helps you keep individual files, folders, or entire volumes organized and up-to-date. This version lets you compare and launch documents, rename files, trash superfluous files, and lots more. **Aug 94**

★★★ **Power To Go 2.0, Claris Corp., 408/727-8227, $99.** PowerBook utility collection has a few unique slants—including a floating palette that can display battery-life estimates—that keep it above the also-rans. It does lack features of similar products. **Dec 93**

★★★ **ProFiles 1.0, Dayna Communications, 801/269-7200, $129.** Unusual new utility lets you group related files and folders for quick access and actions such as making aliases, copying, turning sharing on and off, and more. The recommended RAM allocation of 1MB may be a problem for computers with limited memory. **Aug 94**

★★★★ **QuicKeys 3.0, CE Software, 515/221-1801, $169.** The simple, unintimidating interface of this macro-building utility allows you to build a set of useful shortcuts quickly. **Mar 94**

★★★★ **RAM Doubler 1.0.1, Connectix Corp., 415/571-5100, $99.** Inexpensive system extension doubles available RAM for many Mac users. There are a number of requirements, however, including System 7, 4MB of physical RAM, and a 68030 board. **May 94**

★★★ **Redux Deluxe 2.0.2 (2.5), Inline Software, 203/435-4995, $79.95.** Easy to learn and relatively simple to use, this backup program has some powerful features, such as scripting, but it doesn't have a compression option. **Jan 94**

★★★★ **Retrospect 2.0, Dantz Development Corp., 510/253-3000, $249.** Powerful backup and archiving software has an improved interface and scripting capabilities, and works well for all levels of users. **Sep 93**

★★★★ **Retrospect Remote 2.0, Dantz Development Corp., 510/253-3000, $449.** Utility allows fast, automatic backup of networked Macs to a central Mac with a backup device. It worked flawlessly in our reviewer's tests. **Sep 93**

★★ **SafeDeposit 1.2, Dayna Communications, 801/269-7200, $189.** Automated backup program is easy to set up but slow. Also, unattended backups must be restarted from scratch if disk space runs short and a new disk isn't inserted. **Sep 93**

★★ **Safe or Sorry 1.0, Olduvai Corp., 305/670-1112, $59.** Unobtrusive control panel periodically saves all of your keystrokes, but requires System 7.1 and offers no clear-cut advantages when compared with other text-recovery programs. **Oct 93**

★★★★ **SAM 3.5.8, Symantec Corp., 408/253-9600, $99.** Efficient, thorough virus-protection software slows down system start-up and application launching, but this program is a worthwhile investment for anyone who exchanges or downloads files. **Mar 94**

★★★★ **Screenscapes 1.0.1, Kiwi Software, 805/685-4031, $44.95.** With more than 600 desktop patterns—and a suite of well-designed modules to transform those patterns—this fun and frivolous utility lifts desktop-pattern design to new heights of elegance. **Nov 93**

★★★ **Square One 1.5.2, Binary Software, 310/582-8293, $74.** Flexible, attractive icon-based file launcher provides infinitely customizable palettes, including one that displays active applications. The application will consume 400K of your system memory. **Aug 93**

★★ **Stacker for the Macintosh 1.0.1, Stac, the Data Compression Company, 619/431-7474, $149.** As long as you pay attention to the capacity of your hard drive, this driver-level compression product performs reasonably well, except for its slow hard drive read quotient. **Oct 93**

★★★★ **Star Wars Visual Clips, Sound Source Unlimited, 805/494-9996, $89.95.** Control panel lets you play QuickTime movie clips from *Star Wars* at system events. If you have the money, the hard drive space, and the RAM, this is the kind of totally cool toy that will make you remember why you love your Mac. **Sep 93**

★★★ **Tempo II Plus 3.0.9, Affinity Microsystems, 303/442-4840, $179.95.** Very capable macro-creating utility may be daunting for novices but offers plenty of power for advanced users. **Mar 94**

★★★★ **TimesTwo 2.0, Golden Triangle Computers, 619/587-0110, $149.** This driver-level compression utility is transparent and robust. It caused no problems through a two-month course of testing, on a system with myriad utilities and system software tools. **Mar 94**

★★★★ **Toner Tuner 1.0.3, Working Software, 408/423-5696, $24.95.** Inexpensive, incredibly useful extension adds a sliding bar to print dialog boxes allowing you to adjust the amount of toner applied to each print job. If you can't save trees, you can at least save toner. **Dec 93**

★★★★ **ultraShield 1.252 (2.0), usrEZ Software, 714/756-5140, $149.** Sophisticated security product combines practically every feature you might need into an integrated package, including a lightning-fast version of the U.S. government data-encryption standard. **Dec 93**

★★★ **UnderWare 1.0.1, Bit Jugglers, 415/968-3908, $59.95.** Inspired, silly fun for your Mac's desktop comes from a control panel that adds three features: a screen saver, desktop patterns, and animations that run on your desktop while you work. The price for this whimsy is mostly in disk space. **Jun 94**

★★★★ **Virex 5.0, Datawatch Corp., 919/549-0711, $99.95.** The extremely fast, trouble-free performance of this software makes the task of guarding against computer viruses almost painless. Its speed puts it ahead of the pack. **May 94**

★★★ **Virtual 3.0.1, Connectix Corp., 415/571-5100, $99.** If you need to eke out as much virtual memory speed as possible, this utility may be a useful tool. For System 6 users who want virtual memory, it's the only game in town. **Sep 93**

★★★★ **VirtualDisk 1.1a, Continuum Software, 206/695-8136, $69.** Rapid disk cataloging; fast, efficient label-printing; and an excellent disk-copy utility make this software package a wonderful value. **Jul 94**

★★★ **Working Watermarker 1.02, Working Software, 408/423-5696, $49.95.** Simple, useful system extension allows you to print or fax text and/or graphics "watermarks" in the background of virtually any document. Although it has imperfections, it's earned a permanent spot in our reviewer's System Folder. **Jan 94**

continues

Star Ratings

VERTICAL MARKETS

★★★★ **Claire, The Personal Music Coach 1.0.1, Opcode Systems, 415/856-3333, $129.95.** Musicianship program teaches pitch and interval recognition, sight singing, and intonation. The interface is nonstandard, but it's logical and easy to learn. May 94

★★★★ **Finale 3.0.1, Coda Music Technology, 800/843-2066, $749.** Upgraded music-notation software is now infinitely more pleasant to use. Its comprehensive feature set makes it the standard against which all other music-notation products must be judged. Dec 93

★★ **MacInteriors, Microspot, 408/253-2000, $129.** Correctly placing objects is unduly cumbersome in this interior-design software, but once you catch on to the program's quirks, it's useful. Feb 94

★★★★ **Musicshop 1.0, Opcode Systems, 415/856-3333, $149.95.** MIDI sequencer is an excellent choice as a first sequencer. It's powerful enough to satisfy the needs of most MIDI users. Oct 93

★★★ **Sailing Master 1.1, Starboard Software, 313/662-4393, $64.99.** Though the slow speed and jerky motion point to less-than-polished programming, this sailboat-racing simulation offers good tactical play and is fun—well worth the price for sailing competitors. Nov 93

★★★★ **WillMaker 5.0, Nolo Press, 510/549-1976, $69.95.** Legal software quickly and easily automates the creation of wills, health-care directives and proxies, and final-arrangements documents. It offers excellent supporting explanations, examples, and background. Jun 94

WRITING TOOLS

★★★★ **MacWrite Pro 1.5, Claris Corp., 408/727-8227, $249.** The clean, uncluttered interface of this low- to middle-level word processor is still one of its major assets. This upgrade adds support for QuickTime, PowerTalk, AppleScript, and more. May 94

★★ **MasterWord 5.1, Alki Software Corp., 206/286-2600, $99.95.** The centerpiece of this package of add-on Microsoft Word commands is a set of customizable tool bars. Unfortunately, rough edges remain, including inaccuracies in the documentation and some features that don't work as advertised. Aug 93

★ **The Oxford English Dictionary, Oxford University Press, Electronic Publishing, 212/679-7300, ext.7370, $895.** CD-ROM dictionary contains 20 print volumes, including half a million words, but the flaws, omissions, unreliability and unforgivably poor design are unbearable. Apr 94

★★★ **Random House Unabridged Dictionary, Random House Electronic Publishing, 212/572-2600, $179.** The most comprehensive American-made dictionary on CD-ROM works within any program and is good at guessing misspelled words. Although some functions don't work reliably, the quality and design of the software are better than those of other dictionaries on CD-ROM. May 94

★★★ **Spelling Coach Professional 4.0.1, Deneba Software, 305/596-5644, $195.** If you're considering investing in reference software, this spelling checker, dictionary, and thesaurus is a relatively capable, if expensive, alternative. Oct 93

★★★★ **Thunder 7 1.5.3, Baseline Publishing, 901/682-9676, $99.95.** Stand-alone spelling checker and thesaurus interactively monitors your keystrokes and alerts you to potential errors as they are entered. The program quickly and transparently prevents you from making embarrassing typos. Nov 93

★★★★ **WordPerfect for Macintosh 3. (3.0a), WordPerfect Corp., 801/225-5000, $495.** The innovative interface of this word processor uses context-sensitive button bars and expandable rulers to make innumerable features accessible with a click of the mouse. It's an accomplishment in ease of use. Mar 94

★★★★ **WriteNow 4.0.1, WordStar International, 415/382-8000, $119.95.** Tidy word processor's conservative use of memory (the application fits into a dainty 600K partition) and graceful interface will continue to win it enthusiastic fans. This version adds elegant table capabilities and several PowerBook-friendly features. Jun 94

★★★ **A Zillion Kajillion Rhymes 1.0, Eccentric Software, 206/628-2687, $49.95.** Rhyming dictionary is quick, small, simple, and self-contained; but it only rhymes with the roots of search words (and ignores *-ed*, *-s*, and *-ing* endings). Nov 93

Hardware

INPUT DEVICES

★★★★ **ArtZ ADB Tablet, Wacom Technology Corp., 206/750-8882, $449.** Combining pressure-sensitive operation, manageable size, and a new pencil-thin stylus, this affordable digitizing tablet is perfect for artists looking for traditional-style control of their graphics programs. Aug 93

★★★ **Computer Crayon, Appoint, 510/463-3003, $49.** The kid contingent's verdict was a definite thumbs-up on this brightly colored input device that's shaped like a thick pencil. The buttons can be hard for smaller children to press, and serious computer artists should still opt for a drawing tablet. Oct 93

★★★ **DrawingSlate, CalComp Digitizer Division, 714/821-2000, $395.** Digitizing tablet is a good, compact, low-cost implementation of pressure sensitivity, although the battery-operated stylus is a bit heavy. Jun 94

★★ **Gulliver, Appoint, 510/463-3003, $119.** This diminutive mouse is hard to hold comfortably for an extended period, but it works well on almost any surface and is an acceptable option for PowerBook users. Oct 93

★★★ **PenDirect ADB, FTG Data Systems, 714/995-3900, $498.** Input device lets you manipulate items on the Macintosh screen using a special stylus called a light pen. It works well, although it seems ergonomically inferior to a mouse for routine tasks. Mar 94

★★★ **TrakMate, Key Tronic Corp., 509/928-8000, $149.** Input device integrates a trackball into a wrist pad. While the design is interesting, it's not for everyone. Feb 94

★★★ **Wacom UD-1212R, Wacom Technology Corp., 206/750-8882, $749.** Graphics tablet with pressure-sensitive stylus is easy to use and highly customizable, though it's incompatible with AppleTalk and AppleTalk Remote. May 94

MISCELLANEOUS HARDWARE

★★ **ACS100, Altec Lansing Consumer Products, 717/296-2818, $180.** Lightweight powered speakers don't sound as good as they should. There's too much emphasis on the high end at the expense of the midrange, and they hiss noticeably. Dec 93

★★ **ACS150, Altec Lansing Consumer Products, 717/296-2818, $150.** Subwoofer rounds out the sharp tones of the ACS100, but the bass response is neither punchy enough nor loud enough, and the unit is about the size and weight of a concrete block. Dec 93

★★★ **AppleDesign Powered Speakers, Apple Computer, 408/996-1010, $179.** Tall and curvy powered speaker set looks and sounds good and can produce uncomfortably high volumes without noticeable distortion, but the bare-wire-and-terminal connections aren't user-friendly. Dec 93

★★★ **Apple Newton MessagePad, Apple Computer, 408/996-1010, $699.** Although Apple released this personal digital assistant too early and marketing hype led to mistaken expectations, this is a very intelligent piece of work with an impressive variety of serious business uses. Dec 93

★★★ **Apple PowerCD, Apple Computer, 408/996-1010, $400.** This extremely versatile and beautifully designed portable CD-ROM drive offers impressive audio and Photo CD features, but if you're a serious CD-ROM user, it's too slow to satisfy. Jan 94

★★★ **Ear Phone Streamline AV, Jabra Corp., 619/622-0764, $169.** As a hands-free telephony tool—and as a replacement for the Apple PlainTalk microphone—this telephone/speech-recognition earpiece is a winner. Its biggest drawback is that you can't hear other Mac sounds, such as modem tones, when it's plugged in. Jul 94

★★★ **EMBARC, Embarc Communications Services, 407/364-2000, $395 plus fees.** If you're a PowerBook user who is frequently in places with no telephone and you need timely delivery of electronic news and E-mail, this portable wireless message service may prove useful, but the cost may be prohibitive to others. Sep 93

★★ **G-Vox, Lyrrus, 215/922-0880, $399.** Hardware-software guitar-instruction package lets your Mac "hear" the notes you play on your guitar. Although the hardware works well, the software has some basic problems and doesn't live up to the hardware. Apr 94

★★★ **Hello Music, Yamaha Corp. of America, 714/522-9240, $449.** MIDI starter kit includes an impressive tone generator that's compatible with General MIDI Level 1 and Roland MT-32, but the included software is functional at best. Dec 93

★★ **Macintosh TV, Apple Computer, 408/996-1010, $2079.** As a computer, this combination computer-television-CD player is sleek but slow. You can get faster performance and better expandability from several less-expensive Performa models. Apr 94

★★★ **PowerLink Presentor, E-Machines, 503/646-6699, $499.** Simple, compact Duo dock wobbles a bit when plugged in but provides fine support for a variety of displays, plus ports for ADB, floppy drive, and sound output. Nov 93

★★★ **PowerPlate, Technöggin, 513/321-1777, $169.95 to $299.95.** Line of long-lived, external PowerBook battery packs, each of which lets you work for three to five times as long as the usual PowerBook battery. Unfortunately, the System 7 power manager periodically alerts you that your battery is not charging and dims the screen though battery pack has hours of time left. Mar 94

★★★ **RCD-202, Pinnacle Micro, 714/727-3300, $3995.** Writable CD-ROM drive is good for archiving data simply and inexpensively, but it's incompatible with many hard drives. Mar 94

★★★★ **ThinPack, VST Power Systems, 508/287-4600, $199.95.** External battery pack for PowerBooks is compact, with a lightweight design. It comes with handy power-management utilities. Mar 94

★★★★ **TurboDialer, Advanced Software, 408/733-0745, $79.95.** Automatic telephone dialer is a well-executed product, except for occasional computer noise that seeps into phone conversations. If you constantly dial phone numbers that are stored in your computer, this product will save you time and energy. **Jul 94**

★★★★ **Yamaha YST-M10 Powered Monitor Speakers, Yamaha, 714/522-9240, $149.95.** Powered speakers have a good balanced sound and a great volume range at an outstanding price. **Apr 94**

MODEMS/NETWORK HARDWARE

★★★★ **AsantéHub 1012, Asanté Technologies, 408/435-8388, $1299.** This 12-port, 10BaseT Ethernet hub works right out of the box and is a premium device at a bargain price. **Dec 93**

★★★★ **Cypress PhonePro 1.2, Cypress Research Corp., 408/752-2700, $349 to $950.** By improving its integration with FaxPro and with PowerTalk and PowerShare, this powerful telephony software has greatly extended its business scope. **May 94**

★★★ **DataLink PB; Axcell Cellular Interface, Applied Engineering, 214/241-6060, $824.** If you need a full-blown office on the beach, this PowerBook cellular-modem package with automatic answering machine is a well-executed solution. Each recorded second requires 25K of disk space. **Nov 93**

★★★★★ **EtherWave, Farallon Computing, 510/814-5000, $129.** If you need to expand your network at a reasonable price with minimal fuss, get this Ethernet transceiver. Instead of providing only one 10BaseT twisted-pair jack, it includes a second jack that allows you to daisy-chain to another device through an additional 10BaseT line. **May 94**

★★★ **OneWorld Fax, Global Village Communication, 415/390-8200, $999.** Easy-to-use network fax product lets an office share fax-sending resources without dedicating a hard drive and CPU; however, it can't receive faxes and can't queue more than one fax document at a time from a single CPU. **Aug 94**

★★★ **PerFit Port-A-Com, PerFit, 303/530-7333, $349.** Compact, ADB-powered, high-speed fax/data modem is difficult to configure, due to its Spartan and poorly organized documentation, but is still a solid product at a reasonable price. **Nov 93**

★★★ **SupraFaxModem 144PB, Supra Corp., 503/967-2400, $349.95.** If you're looking for a high-speed internal modem for your PowerBook, and you want to save a few bucks, this modem is worth considering. Disabling its fax software solved occasional transfer problems. **Nov 93**

★★★★ **SupraFaxModem 288, Supra Corp., 503/967-2410, $349.95.** This 28,800-bps fax modem is a very good performer, as good as or better than 14,400-bps modems, and the price of admission isn't terribly steep. Combined with fast, stable fax software and a good terminal program, it's hard to beat. **Aug 94**

★★★ **Watermark Message Central 2.0.2, High Tide Software, 510/704-9927, $499.** If you're willing to put in a lot of effort, you'll find this highly sophisticated voice-mail system supremely flexible. It includes a specially modified modem with voice chip, as well as fax software and telecommunications software. **Jul 94**

PRINTERS

★★ **Address Express, CoStar Corp., 203/661-9700, $499.** Flaky performance and system crashes plagued this envelope-and-label printer in our tests, but the print quality was good. **Oct 93**

★★★ **Apple Color Printer, Apple Computer, 408/996-1010, $2349.** If you need large-format color output, but not precision color-matching, this well-built printer is a reasonable choice, although it doesn't support PostScript. **Aug 93**

★★★★ **Apple Portable StyleWriter, Apple Computer, 408/996-1010, $439.** Sleek, portable ink-jet printer weighs 4½ pounds and is a pleasure to use. It uses standard StyleWriter cartridges. **Jan 94**

★★ **Brother HJ-400, Brother International, 908/356-8880, $369.** Compact, 360-dpi ink-jet printer is fairly slow and does not allow background printing. Some large files require additional application memory to print correctly. **May 94**

★★★★ **DeskWriter 310, Hewlett-Packard, 800/752-0900, $379 to $455.** Versatile, low-cost ink-jet printer is a 4.3-pound, battery-powered portable. With its 60-page sheet feeder, it's also a great desktop printer; and with a $49 color print cartridge, it offers inexpensive three-color printing. **Mar 94**

★★★ **HP LaserJet 4ML, Hewlett-Packard, 800/752-0900, $1279.** Primarily for those of you who use a PC or work in a small, mixed-platform environment, this energy-efficient laser printer offers automatic port and language switching, and is a good buy. Its advanced PC features may not be worthwhile for those who use Macs only. **May 94**

★★★★ **LaserWriter Select 300, Apple Computer, 408/996-1010, $839.** Inexpensive, low-capacity printer is networkable, and an excellent buy, despite a few weaknesses. Add a 4MB SIMM to take advantage of the amazing PhotoGrade capabilities, which allow the printer to generate 91 shades of gray. **Aug 93**

★★ **LaserWriter Select 310, Apple Computer, 408/996-1010, $1099.** This big, slow printer is a true Adobe PostScript printer with both Mac and DOS ports, but it's not networkable or compatible with the Communications Toolbox, it can't automatically switch ports, and it doesn't have adjustable paper guides. **Aug 93**

★★★★★ **LaserWriter Select 360, Apple Computer, 408/996-1010, $1599.** Low-cost, high-performance, 10-ppm printer is perfect for small LocalTalk or mixed networks. For bigger networks, consider buying more than one; they're more cost-effective than a 20-ppm printer. **Apr 94**

★★★ **microLaser Pro 600, Texas Instruments, 800/848-3927, $2148.** Overall, this workgroup printer is fast and provides good print quality. The price is steeper than that of other products, but if you work in a busy office where a really fast printer makes everybody's life easier, the higher price may be worth it. **Jul 94**

★★★ **MobileWriterPS, Mannesmann Tally Corp., 206/251-5524, $999.** Fast, portable printer is currently the only PostScript portable available. While the print quality is quite good on glossy laser paper, it's mediocre on inexpensive bond. **Dec 93**

★★ **Notebook Printer II, Citizen America, 310/453-0614, $399.** If weight and size are your biggest concerns in choosing a portable printer, and you print primarily in black and white, this thermal-fusion printer may be a good choice. If speed is at all an issue, however, other options may be preferable. **Jun 94**

★★★★ **Personal LaserWriter 320, Apple Computer, 408/996-1010, $959.** If you have been holding out for a high-quality personal laser printer that is fast enough to share over LocalTalk, the small inconveniences of this 300-dpi printer are easily outweighed by its low price, good speed, and PostScript Level 2 support. **May 94**

★★★ **Phaser 200i Color Printer, Tektronix, 503/682-7377, $5995.** This thermal-wax color printer is fast and compact, with versatile paper-handling features. TekColor image-enhancement technologies provide excellent output quality that is, however, poor on letterhead and inexpensive photocopier bond. **Aug 93**

★★ **QMS ColorScript Laser 1000, QMS, 205/633-4300, $9999.** Color laser printer succeeds in combining the versatility of monochrome laser printing with attention-getting color, but if you don't need to chase rainbows right away, you might wait and see if competition drives prices down and capabilities up. **Jul 94**

★★★ **Silentwriter 640, NEC Technologies, 508/264-8000, $800.** With 3MB of RAM, PostScript Level 2 support, and a 6-pages-per-minute engine, this printer is a capable performer. Generally, it represents hassle-free printing, but it doesn't handle single sheets of paper well. **Jun 94**

★★★ **Smart Label Printer Pro, Seiko Instruments, 408/922-5900, $299.95.** If you need to print only a few labels at a time, this label printer may be an expensive but good choice. It prints very quickly, and with excellent print quality. **May 94**

SCANNERS

★★★★ **Coolscan LS-10e, Nikon Electronic Imaging, 516/547-4200, $2600.** Compact desktop scanner for digitizing images from 35mm transparencies is slow, but delivers images good enough for newsprint publications and some catalogs. **Dec 93**

★★★★ **Epson ES-800C, Epson America, 310/782-0770, $1499; Macintosh interface kit $399.** Flexible 400-dpi scanner offers a range of options, including one- or three-pass scanning, plus a full-featured, easy-to-use software package. **Aug 93**

★★★★ **IX-4015 Color Image Scanner, Canon Computer Systems, 714/438-3000, $1169.** The price of this color flatbed scanner is competitive, and its speed and excellent bundled software make it easy to use and a good choice for the small office. If you can get by without legal-size scans, it should serve you well. **Jul 94**

★★★ **LightningScan Portable, Thunderware, 510/254-6581, $459.** PowerBook owners will find this hand scanner's modem- or serial-port connection, lightweight interface, and total portability well worth the cost, although the scanner is incompatible with some desktop Macs. **Dec 93**

★★★★ **Mirror 800 Plus Color Scanner, Mirror Technologies, 612/633-4450, $1299.** Add the NuBus JPEG board ($300) and easy-to-use 35mm transparency scanning module ($599) and you get a nifty—if slow—desktop scanning package for a reasonable price. **Jan 94**

★★★ **ScanMaker 35t, Microtek, 213/321-2121, $1999.** Speedy 35mm film scanner accommodates loose film and delivers a good image, but the included software is weak. **Dec 93**

SYSTEMS/STORAGE

★★★★ **DataPak 105, Mass Microsystems, 408/522-1200, $949 to $1049.** Well-built 105MB SyQuest drive comes with a decent, no-frills cartridge-formatting package and a copy of 7th Heaven. The preformatted cartridges have a lifetime warranty. **Sep 93**

continues

Star Ratings

★★★ **EtherDock, E-Machines, 408/541-6100, $699.** Heavy-duty Duo docking option is equipped with a full set of 11 ports, including an Ethernet port. The locking mechanism is alarmingly wobbly—although reliable enough to ensure a good connection. **May 94**

★★★ **Expert Pad PI-7000, Sharp Electronics Corp., 800/993-9737, $899.** Personal digital assistant features the advantages of the Newton, in a better industrial design and at a comparative price. If the battery lasted longer and the message network were implemented, the PDA revolution could begin. **Feb 94**

★★ **HP Optical Disk Library 10LC, Hewlett-Packard, 800/752-0900, $9495.** Optical jukebox may fill the need for 10 gigabytes of online storage, but its performance is poor, and the software lacks the features needed for adequate management. **Jan 94**

★★★★ **Infinity 105 Turbo, Peripheral Land, 510/657-2211, $795 to $894.** Small, light, quiet, inexpensive 105MB SyQuest drive is ingeniously packaged and ideal for both desktop and PowerBook use. **Sep 93**

★★★★ **LC 575, Apple Computer, 408/996-1010, $1699.** For students and small-business professionals who want high power and the convenience of having everything integrated into one case, this 33MHz 68040 system is an ideal choice. **Jun 94**

★★★ **Newton MessagePad 110, Apple Computer, 408/996-1010, $599.** This is the personal digital assistant that Apple should have shipped in August 1993, with improved handwriting recognition, including deferred and letter-by-letter recognition. It also has more memory, longer battery life, and a more efficient design. **Aug 94**

★ **NuTek Duet, NuTek USA Corp., 408/973-8799, $2996.** Mac workalike is both a PC and a Mac in a single box, but because of many incompatibilities and problems, the Duet is not a computer anyone should consider using for serious work. **Feb 94**

★★★ **OrangePC, Orange Micro, 714/779-2772, $1799.** NuBus board has a DOS processor, letting you have your Mac and a PC, too. It's fairly well executed, though there are some minor problems. **Oct 93**

★★★★ **OrangePC Model 200 Series, Orange Micro, 714/779-2772, $1139 to $3237.** If your goal is to get a Mac that runs Windows as fast as a PC, you can't get there from here. If your goal is to get business-level performance for day-in, day-out use, these PC coprocessor cards are probably your best choice. **Aug 94**

★★★ **PLI 2.4 GB MiniArray, PLI, 510/657-2211, $4815.** Slick and elegant RAID drive worked beautifully in tests, but it costs more than other options and the QuickSCSI board is sensitive to minor SCSI problems. **Apr 94**

★★★★ **PowerBook 140 F/25 Upgrade, Digital Eclipse Software, 510/547-6101, $399.** By changing the oscillators and adding an FPU, Digital Eclipse changes PowerBook 140s into 170s, minus the active matrix screen. While the upgrade seems expensive, it's the only way to extend the viability of a 140. **Dec 93**

★★ **PowerBook 180c, Apple Computer, 408/996-1010, 4/80 $4169.** The active matrix screen of this color notebook computer is beautiful but so small that its usefulness is very limited. **Sep 93**

★★★★ **PowerBook Duo 270c, Apple Computer, 408/996-1010, 4/240 $3099.** Notebook computer meets all the demands of power users; it weighs less than five pounds, features a color active matrix display, and offers longer battery life. The lack of a floppy drive can be inconvenient, though. **Feb 94**

★★★★ **Power Macintosh 6100/60, Apple Computer, 408/996-1010, base model $1819.** Given its price and performance, this Power Macintosh is hard to resist. When developers offer in PowerPC format the software that most business users run daily, this should be a system that will give you power to spare. **Jun 94**

★★★★★ **Power Macintosh 7100/66, Apple Computer, 408/996-1010, $2899.** Midrange Power Mac makes an outstanding workstation whose power should last for several years. The price is nothing to take lightly, but this system delivers every dollar's worth. **Aug 94**

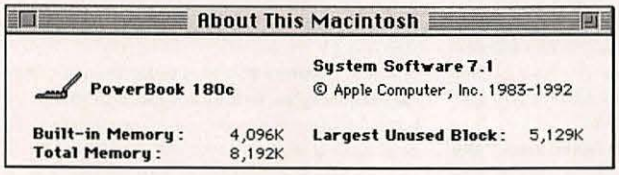
★★★★ **Power Macintosh 8100/80, Apple Computer, 408/996-1010, $4249.** While this system doesn't quite offer the excellent price/performance ratio of the other available Power Macs, you should consider it if you're a high-end user moving your work over to RISC-based computing. **Aug 94**

★★★★ **Quadra 605, Apple Computer, 408/996-1010, 4/80 $979.** Never before has Apple offered so much performance for so little money. The performance and price of this 040-based machine match those of a standard entry-level 486SX-based Windows PC. **Mar 94**

★★★★ **Quadra 800, Apple Computer, 408/996-1010, 8/230 $4679.** Squat, yet curvy and attractive, this minitower system has fewer expansion opportunities than the Quadra 950, but just as much power. It's fast, slick, and moderately priced. **Aug 93**

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★★★★ **Quadra 840AV, Apple Computer, 408/996-1010, 8/230 $4069.** Technological tour de force uses a 40MHz 68040 and an AT&T 3210 digital signal processor, and is brimming with sophisticated speech-recognition and audiovisual technology. Beware of some hardware and software incompatibilities. **Dec 93**

★★★ **SCSI MicroDock, Newer Technology, 316/685-4904, $175.** Tiny Duo docking station is just under 4½ ounces and barely 5 inches long. It adds only an ADB port and a SCSI port—but both are useful. **May 94**

★★★★ **SledgeHammer2000FMF, FWB, 415/474-8055, $3179.** RAID drive is both fast and inexpensive. Although it can be a bit noisy when accessing data, it's a good deal. **Apr 94**

★★★ **SmartStack, Envisio, 612/628-6288, SmartSource $119; SmartModules $289 to $1379.** The SmartStack line of modular storage peripherals may be neatly stacked on top of a common power supply to reduce desktop clutter and cabling problems. **Sep 93**

★★★ **Turbo 040, DayStar Digital, 404/967-2077, $1899.** This accelerator card is equipped with the fastest 68040 chip available and is as fast as or faster than any Macintosh in processor-intensive tasks. For the price, however, it may make more sense to trade up to a faster computer. **Dec 93**

VIDEO/DISPLAY

★★★ **Apple QuickTake 100 for Macintosh, Apple Computer, 408/996-1010, $749.** If you're in the market for a medium-quality, digital color camera that costs less than $1000, this is the best deal around. But if you're not in a hurry, you may want to wait until some of the camera's more obvious problems, such as its fixed-focus lens and lack of a zoom option, are ironed out. **Jul 94**

★★★ **AudioVision 14 Display, Apple Computer, 408/996-1010, $769.** Monitor integrates audio and video with built-in speakers that produce surprisingly rich, full-bodied sound. The display, while nice, is small for multimedia work. **Dec 93**

★★★ **Dycam Model 3, Dycam, 818/998-8008, $895.** Low-end, digital still camera is easy to use, and is a solid product if Instamatic grade gray-scale meets your image-quality requirements. **Sep 93**

★★★ **Editing Aces Suite, RasterOps, 801/785-5750, $3899.** Video professionals can record and play back full-screen movies in 24-bit color with 16-bit CD-quality sound with these products. Despite flaws, this package represents a step forward in QuickTime technology. **Nov 93**

★★★ **Intellicolor Display/20, Radius, 408/434-1010, $3199.** Although with its exceptional brightness and clarity this monitor would be a fine addition to any designer's desk, the included Intellicolor software, which lets you control the settings of your display, doesn't offer much added value. **Apr 94**

★★★ **L-TV Portable, Focus Enhancements, 617/938-8088, $299.** Sturdy, inexpensive, external TV-converter plugs into your Macintosh and converts video output to NTSC. It provided a crisp, clean image, but mild flickering and conspicuous shimmers were persistent. **Aug 94**

★★★ **L-TV Pro NuBus, Focus Enhancements, 617/938-8088, $399.99.** NuBus card converts your Mac's RGB video signal to NTSC so you can use your Mac with a TV or VCR. It supports a wide range of Macs, but the image has some flicker and distortion, despite flicker-filtering software. **Aug 94**

★★★★ **MovieMovie, Sigma Designs, 510/770-0100, $349.** This 7-inch NuBus video-capture board may be what you've been waiting for. The price is right, and the addition of on-board audio input is a plus, even if it is only mono. **Dec 93**

★★★ **PaintBoard Turbo, RasterOps, 408/562-4200, $1499.** Midrange video board supports 24-bit color on monitors up to 17 inches and resolutions as high as 1024 by 768 pixels. If you can live without changing resolutions on the fly, it's a reasonably good deal. **Oct 93**

★★★ **The Presenter Plus Mac/PC, Consumer Technology Northwest, 503/643-1662, $429.** Small, external TV-converter supports output to television from most Macs with built-in video. It does a barely passable job of providing a stable image. **Aug 94**

★★★ **QA-350 LCD, Sharp Electronics Corp., 800/237-4277, $2495.** At less than half the cost of a typical active matrix LCD panel, this passive matrix projection panel offers an economical alternative for presenters who don't need multimedia capability. **Jul 94**

★★★ **Simply TV, E-Machines, 408/541-6100, $439.** Easy-to-install video card plugs snugly into a PDS slot, and allows you to use your Mac with a television for display. The image is impressively flicker-free, but the resolution is limited to 256 colors. **Aug 94**

★★★ **VideoToolkit 2.0.1, Abbate Video, 508/376-3712, $279.** Despite a few rough edges, this is an attractive, inexpensive solution for those who need to catalog and edit videotapes on a budget. **Sep 93** m

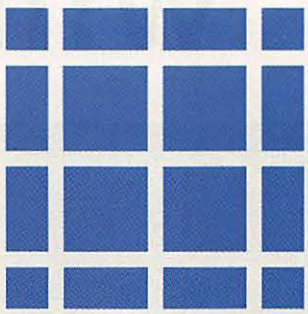
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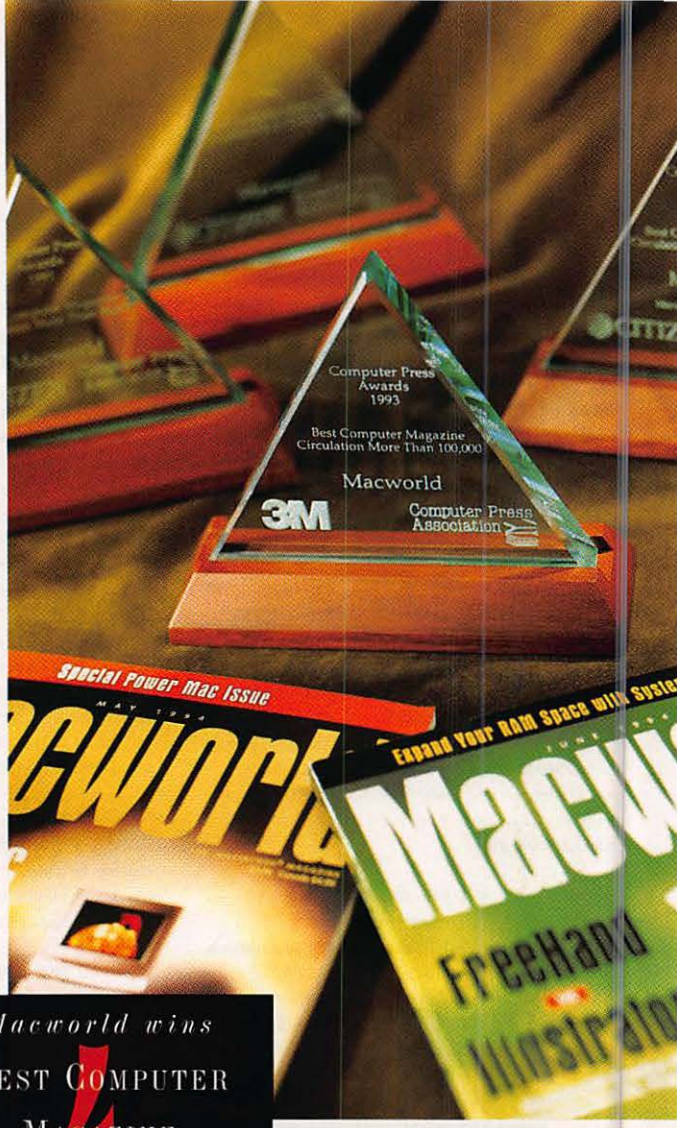
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we win.



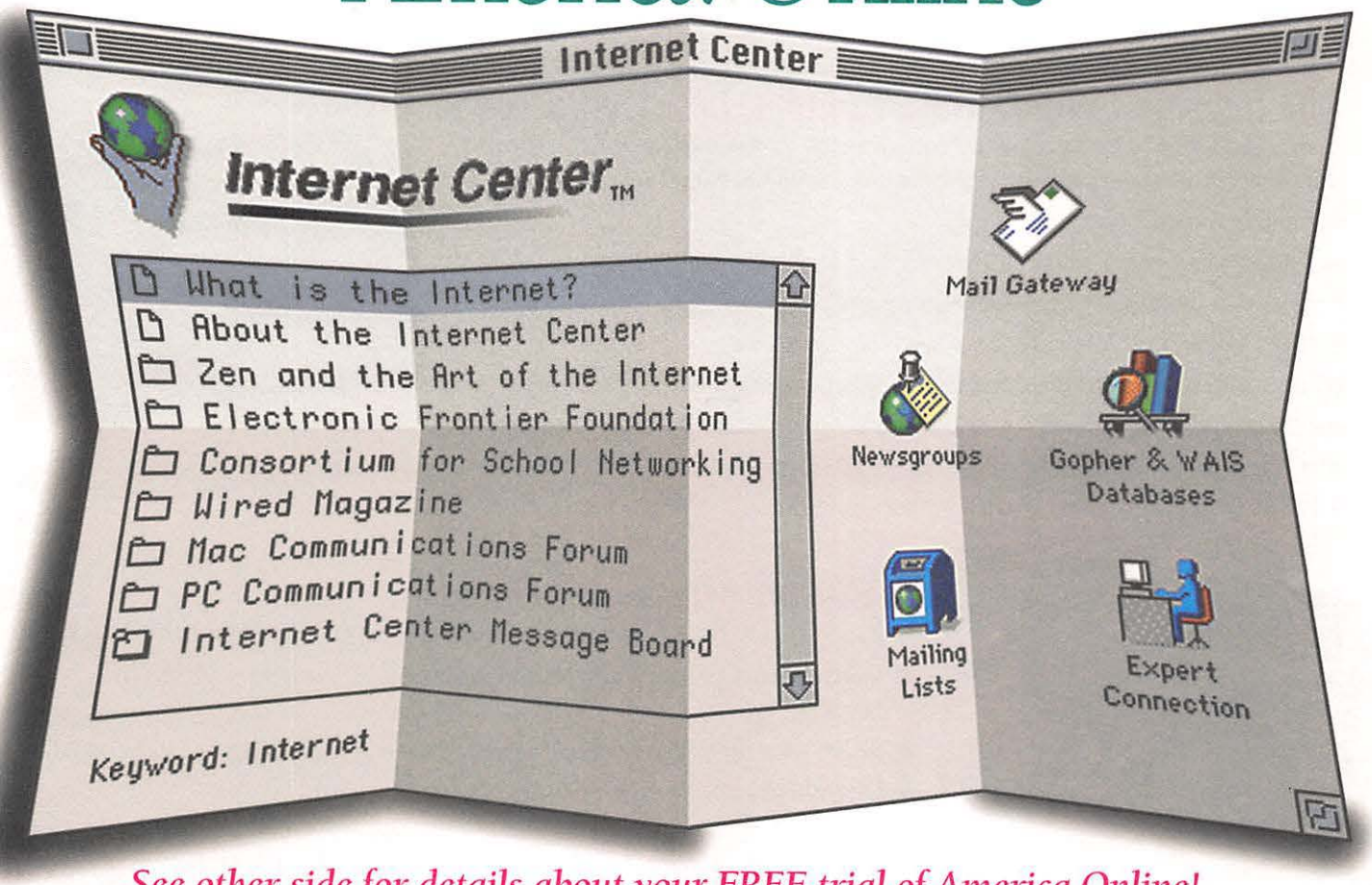
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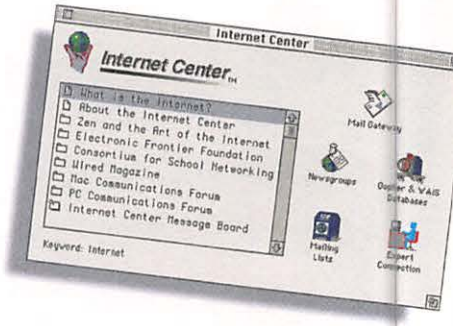
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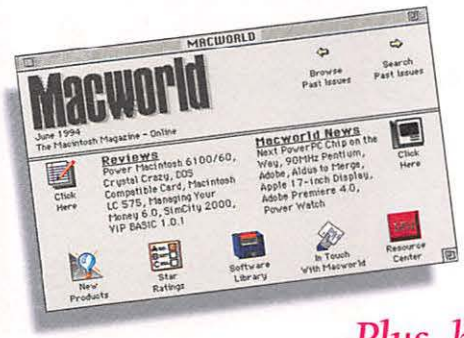
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Selected and edited by Charles Barrett

The following listings include Macworld Boston Expo show specials and other promotions sponsored by Macintosh vendors and their resellers. The listings indicate which products have been awarded a star rating in *Macworld's Reviews* (products rated ★★ or lower are not eligible for inclusion), have been selected as an **Editors' Choice**, or have won a **World-Class** award. In some cases, the editorial evaluation quoted is for an earlier product version. The ◀ symbol indicates that the product is Power Mac related.

When placing an order, please mention that you saw the offer in *Macworld*. Should any problems arise, contact the *Streetwise Shopper* editor by fax (415/442-0766), phone (415/978-3241), or mail (*Macworld*, 501 Second St., San Francisco, CA 94107).

Vendors and resellers desiring to have products and services included in this section are encouraged to contact the *Streetwise Shopper* editor with particulars.

BUNDLES

Fractal Design Dabbler + PenMouse Tablet Fractal Design is bundling Kurta Corporation's $249 PenMouse cordless pen, tablet, driver software, and accessory package with its $99 Dabbler natural-media draw and paint application for beginners for $249. Call 800/445-8782 for nearest reseller. *Offer expires 12/31/94.*

◀ **Ray Dream Designer 3.1 + Terrazzo** Ray Dream is offering a $279 bundle consisting of Xaos Tools' $199 Terrazzo, a new Photoshop plug-in for creating tilable textures and patterns, and its own $349 Ray Dream Designer 3-D–imaging software (Aug 93 "Depth-Defying Design" **Editors' Choice** for version 2.0.4; Sep 92 ★★★★ for version 2.02). Call 800/846-0456 for more information and to order. *Macworld Expo show special available from 8/2 through 8/5/94 only.*

Virtus WalkThrough 1.1.3 + ◀ **Virtus VR 1.0.1** Virtus Corporation is bundling its $195 WalkThrough (Jul 93 ★★★), which provides interactive access to rendered 3-D scenes, with its $99 Virtus VR virtual reality simulator, which is Power Macintosh native, for $149. Call 800/847-8871 for more information. *Offer expires 8/31/94.*

COMPETITIVE UPGRADES

ClarisDraw 1.0 Claris Corporation is offering this brand-new $399 successor to MacDraw for $99 to users of MacDraw II or any other graphics program. The upgrade price drops to $89 for MacDraw Pro users ($29 if they purchased MacDraw Pro after 6/1/93), who will be provided with over 75 additional features. Available direct or through resellers. Call 800/325-2747 for more information. *Offer expires 11/30/94.*

DiskFit Pro 1.1 Dantz Development is offering this $125 utility for backing up to removable drives (Apr 92 ★★★ for version 1.0) to users of any other backup program. Call 800/225-4880 to order. *Offer expires 9/30/94.*

Panorama II ProVue Development is offering this $395 flat-file database (**1993 World-Class**; May 92 ★★★★ for version 2.0) in specially marked packages for $99.95 to users of competitive products such as FileMaker Pro, 4th Dimension, and Helix. Call 800/966-7878 for more information. *Offer expires 12/31/94.*

Powerlaunch II 1.7d Interrealm is offering this $35 application-launching palette program to users of Square One and At Ease for $25. Version 1.7d includes an unlimited number of resizable palette sets as well as new Finder Quickapp extensions. A trial version of Powerlaunch is available on several online services. Call 303/366-8327 for more information.

PowerPrint 2.5.1 GDT Softworks is offering this $149 printer-driver utility (Sep 94 ★★★★; **1994 World-Class**) for $75 to registered users of competitive products such as MacPrint and GrapplerIIsp. PowerPrint makes more than 1000 PC-based printers Mac-compatible. Call 800/663-6222 for more information.

SPECIAL DISCOUNTS

addDepth 1.0.2 Ray Dream is offering this $149 graphics utility for enhancing 2-D images with 3-D effects (Aug 93 ★★★) for $49. Call 800/846-0456 for more information and to order. *Macworld Expo show special available from 8/2 through 8/5/94 only.*

Berkeley Systems Screen Savers Berkeley Systems is offering a 50% discount on any of these $49.99 screen savers: After Dark, The Simpsons, Marvel Comics' X-Men, Launch Pad, and The Disney Collection. Call 800/344-5541, ext. 702, for more information and to order. *Macworld Expo show special available from 8/2 through 8/31/94 only.*

Collage 2.0; ◀ **Infini-D 2.6** Specular International is offering its $349 Collage image-compositing software (Jul 94 ★★★ for version 1.0.1) for $199, and its $695 Infini-D 3-D–design application (Jan 93 ★★★★ for version 2.0) for $399. Call 800/433-7732 to order. *Macworld Expo show specials available from 8/2 through 8/5/94 only.*

ComputerEyes/RT 1.0.3; TelevEyes/Plus1.0; TelevEyes/Pro 2.0.1 Digital Vision is offering its $599.95 ComputerEyes SCSI video frame-grabber for $407.97, its $449.95 TelevEyes/Plus Mac-to-TV converter for $305.97, and its $799.95 TelevEyes/Pro converter with genlock/overlay for $543.97. Call 800/346-0090 for more information and to order. *Macworld Expo show specials available from 8/2 through 8/5/94 only.*

Conflict Catcher II 2.1; SnapMail Casady & Greene is offering its $79.95 Conflict Catcher II INIT-manager utility (Mar 93 ★★★★ for Conflict Catcher 1.0) for $35. Its $200 (five-pack) and $320 (ten-pack) Snap Mail electronic-mail and messaging packages are also available for $95 and $150, respectively. Call 800/359-4920 to order, and 408/484-9228 for more information. *Macworld Expo show specials available from 8/2 through 8/5/94 only.*

KPT Bryce 1.0 HSC Software is offering an introductory price of $99 for this $199 application for designing and rendering 3-D landscapes in a completely new way. KPT Bryce comes with a CD-ROM containing hundreds of preset, fully rendered images for redesign, as well as a 360-degree panoramic plug-in screen-saver module for Berkeley Systems' After Dark. Call 310/392-8441 for more information and to order. *Offer not to expire before 8/31/94.*

MacHandwriter EPS Associates is offering Communication Intelligence Corporation's $299 pen computing solution for $249. MacHandwriter consists of a 6-by-9-inch graphics tablet, cordless pen (a $125 pressure-sensitive pen is optional for $90), and handwriting-recognition software. Call 800/685-4387 for more information and to order. *Macworld Expo show special available from 7/25 through 8/25/94.*

Nisus 3.4 Nisus Software is offering a $90 discount on either of two editions of this multilingual word processor: the Limited Flag Edition (includes 9 languages) for $149.95, and the Complete Flag Edition (includes 18 languages) for $199.95. Available through MacConnection (800/800-0002). *Macworld Expo show specials available from 8/2 through 8/31/94.*

Norton DiskLock 3.0 Symantec Corporation is offering a special $99 introductory price on the new version of this $129 security software (Jan 94 ★★★★ for DiskLock PB 1.0, the PowerBook version); its $1161 ten-user DiskLock Administrator package is available for $891. Call 800/441-7234 for more information. *Offer expires 9/7/94.*

◀ **Now Contact 1.1** Now Software is offering a special introductory price of $49.95 for the latest version of its $65 (estimated street price) contact manager (Mar 94 ★★★ for the 680X0 version 1.0). On installation, users can choose between native Power Mac (company claims performance is boosted by up to four times for most operations) and 680X0 versions. Call 800/237-3611 for more information. *Offer expires 8/31/94.*

Peachpit Press Books Peachpit Press, which specializes in desktop publishing and introductory guides, is offering a 20% discount on all of its computer books for the Macintosh. Call 800/980-8999 for more information and to order. *Macworld Expo show special available from 8/2 through 8/5/94 only.*

Peirce Print Tools 1.0; Smoothie 1.0 Peirce Software is offering its $129 Peirce Print Tools—a collection of printing utilities (including QuickDraw GX) that provides watermarks, borders, cover pages, and print logs—for $49. Its $149 Smoothie utility for smoother on-screen text and graphics is also available for $49. Both products can be purchased together for $89. Call 408/244-6554 for more information and to order. *Macworld Expo show specials available from 8/2 through 8/5/94 only.* m

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A. Including yourself, approximately how many people are employed at your entire work-site (i.e., employees in your office, building, or cluster of buildings)? (Check one.)

01 ❑ 1000+
02 ❑ 999 - 100
03 ❑ 99 - 25
04 ❑ Under 25

B. Which of the following computers are installed at this entire work-site? (Check all that apply.)

05 ❑ Apple Workgroup Servers/ Mac Quadra-series
06 ❑ Mac Centris-series/II-series/LC III/ Performa 600/450/SE 30
07 ❑ Mac LC/LC II/Performa 430/405/ 400/200/Classic-series/SE/Plus/ 512K/128K/Portable
08 ❑ Mac PowerBook-series/Duo-series

C. What is the total number of Macs installed at this entire work-site? (Check one.)

D. For how many Macintosh computers within this entire work-site do you have purchase involvement for products and/ or services? (Check one.)

	C	D
500+	❑ 09	❑ 15
499 - 100	❑ 10	❑ 16
99 - 50	❑ 11	❑ 17
49 - 10	❑ 12	❑ 18
9 - 1	❑ 13	❑ 19
None	❑ 14	❑ 20

E. In which ways are you ever involved in purchase decisions for Macintosh products at this entire work-site? (Check all that apply.)

21 ❑ Initiate/Determine need for product/capabilities/features
22 ❑ Evaluate, recommend, or approve brands/models
23 ❑ Evaluate, recommend, or approve purchase source
24 ❑ Authorize purchases

F. Over the next 12 months, how much will this entire work-site spend on Macintosh products and/or services? (Check one.)

25 ❑ $1 million or more
26 ❑ $999,999 – $500,000
27 ❑ $499,999 – $100,000
28 ❑ $99,999 – $50,000
29 ❑ $49,999 – $10,000
30 ❑ Under $10,000

G. Considering the entire work-site, which of the following Macintosh hardware and software products are currently installed? (Check all that apply.)

31 ❑ Business software (Word processing, spreadsheet, database, etc.)
32 ❑ Graphics/publishing software
33 ❑ Monitors/displays
34 ❑ Printers/scanners
35 ❑ Networking/communications hardware and/or software
36 ❑ Multimedia/AV hardware and/or software
37 ❑ Mobile computing products (PowerBooks, peripherals, software, etc.)

H. What is your primary job function? (Check one.)

38 ❑ Computer Reseller/VAR/VAD
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40 ❑ Engineering
41 ❑ R&D/Scientific
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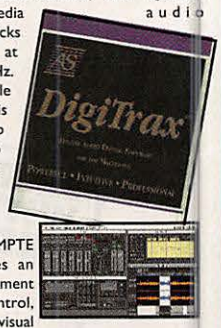
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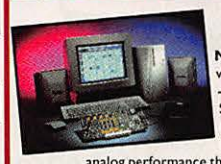
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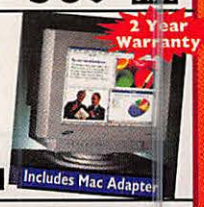
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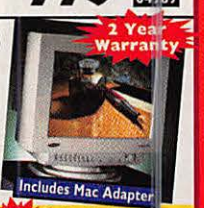
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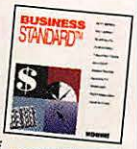


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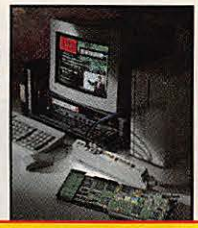
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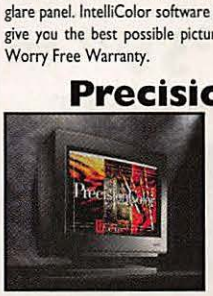


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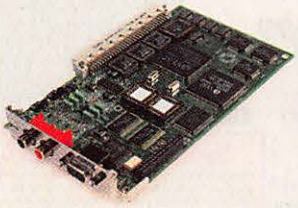
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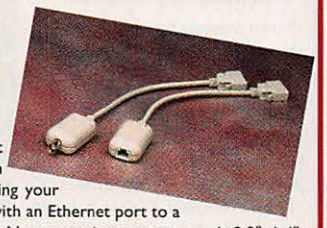
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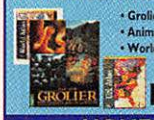
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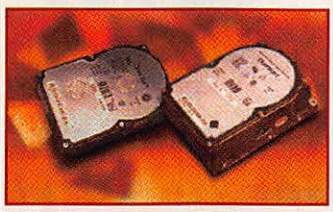
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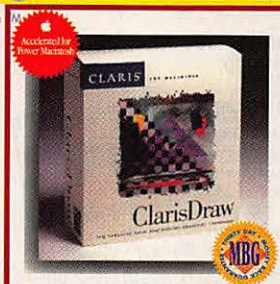
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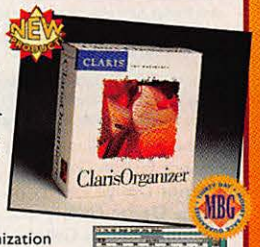
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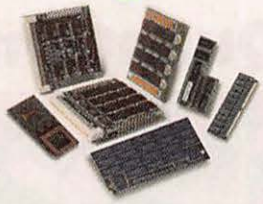
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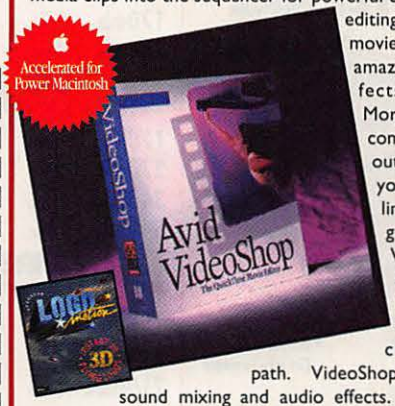
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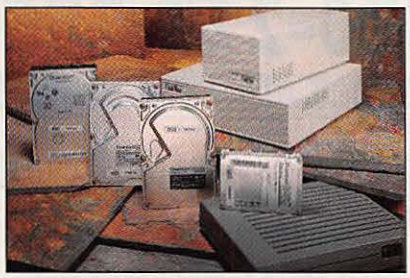
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MacMall FAX Order Line: 310-222-5800
Offer Code: D482MG14 Order Status: 800-560-6800

1-800-258-2622 1-800-CLUBMAC 1-800-258-2622

Hard Drives Quantum



ClubMac 30 DAY MONEY BACK GUARANTEE

Quantum's hard disk drives are available in 2.5 and 3.5-inch form factors in storage capacities ranging from 85 megabytes to 2.1 gigabytes

LPS 270MB INTERNAL



- Fast SCSI-2
- 4,500 RPM
- 10ms access time
- WriteCache & DisCache Firmware

ClubMac 30 DAY MONEY BACK GUARANTEE

Includes all necessary brackets and software

GO•DRIVE SERIES
2.5" POWERBOOK DRIVES

Capacity	Access	Internal	External
170mb	17ms	$259	$379
256mb	17ms	$339	$459

LPS SERIES
3.5" LOW PROFILE

170mb	14ms	$189	$249
270mb	11ms	$239	$299
340mb	11ms	$279	$339
540mb	10ms	$399	$459

EMPIRE SERIES
3.5" HIGH PERFORMANCE LOW PROFILE

1080mb	9.5ms	$739	$799
1440mb	9.5ms	$909	$969
2100mb	9.5ms	$1359	$1419

Quantum Pro and LPS series carry a TWO Year Warranty
Go-Drives carry a ONE Year Warranty

Seagate

ClubMac 30 DAY MONEY BACK GUARANTEE

NEW PRICING!



Unformatted Capacity	Model	Description	Access Time	Actual MAC Capacity	Internal	External
3.5" HALF HEIGHT						
1.9GIG	ST11900N	*Hawk 2*	9ms	1600mb	$1179	$1239
2.4GIG	ST12400N	*Hawk 2*	9ms	2000mb	$1329	$1389
1.9GIG	ST11950N	*Barracuda 1*	8ms	1350mb	$1445	$1505
2.4GIG	ST12550N	*Barracuda 2*	8ms	2050mb	$1629	$1689
4.0GIG	ST115150N	*Barracuda 4*	8.5ms	4000mb	$2469	$2529
5.25" FULL HEIGHT						
3.4GIG	ST43400N	*Elite-3*	11ms	2750mb	$1999	$2099
9.0GIG	ST410800N	*Elite-9*	11ms	8600mb	$3999	$4099

Seagate drives carry a ONE Year Warranty

CD-ROMs

NEC

NEC MultiSpin 3Xp

The 3Xp combines 3X transfer rate performance, 250ms access time and a 256 KB continuous-flow cache in a compact design, making it and incredible value. At only 2.4 lbs the 3Xp is the world's lightest triple speed CD-ROM reader.



MultiSpin CD-ROM READER | MPC2 Multimedia PC | PhotoCD

MultiSpin 3Xp CD-ROM Reader

CD-ROM READERS

	w/o bundle	w/ClubMac CD bundle
MultiSpin 3Xp (Portable, 250ms access time, very light; 2.4 lbs)	$399	$499
MultiSpin 3Xi (Internal, 195ms access time, 450KB/sec data transfer)	$439	$539
MultiSpin 3Xe (External, 195ms access time, 450KB/sec data transfer)	$469	$569
MultiSpin 4X Pro (External, 180ms access time, 600KB/sec data transfer)	$935	$1035

NEC MultiSpin CD-ROM Readers carry a TWO Year Warranty

ClubMac Removable Hard Drives



FEATURING SyQuest REMOVABLE TECHNOLOGY

ClubMac 30 DAY MONEY BACK GUARANTEE



CLUBMAC 3.5" REMOVABLES

CLUBMAC 5.25" REMOVABLES

CLUBMAC REMOVABLES

	Internal	External
ClubMac 44mb 5.25" (SQ555)	$199	$229
ClubMac 88c 5.25" (SQ5110C)	$379	$419
ClubMac 200mb 5.25" (SQ5200)	$529	$569
ClubMac 105mb 3.5" (SQ3105)	$289	$329
ClubMac 270mb 3.5" (SQ3270)	$499	$539

CARTRIDGES

44mb (SQ400)	$59
88mb (SQ800)	$69
200mb (SQ2000)	$79
105mb (SQ310)	$59
270mb (SQ327)	$75

All SyQuest drives include a TWO Year Warranty.
All drives include SCSI Director formatting software, ONE FREE Cartridge, necessary cables for "plug-and-play" and documentation.
All SyQuest cartridges include a FIVE Year Warranty.

ClubMac Optical Drives

ClubMac 30 DAY MONEY BACK GUARANTEE

ASK ABOUT OUR NEW 1.3 GIG SHARP OPTICAL



CLUBMAC 5.25" 650MB SHARP OPTICAL

	Access Time	Internal	External
ClubMac (M2512A) 3.5" 230mb Fujitsu Optical	30ms	$899	$929
ClubMac (JY-750) 5.25" 650mb Sharp Optical	40ms	$1669	$1699
ClubMac (JY-800) 5.25" 1.3GIG Sharp Optical	40ms	$2069	$2099
MaxOptix Tahiti III (9400) 5.25" 1.3GIG Optical	19ms		$2499
Hewlett-Packard (C1716T) 5.25" 1.3GIG Optical External	28ms		$2429

All ClubMac Opticals include ONE cartridge and ONE Year Warranty.

ClubMac Tape Backups

ClubMac 30 DAY MONEY BACK GUARANTEE



Capacity	Model	Format	Media	Internal	External
2.0GIG	ClubMac DAT	DDS	60m, 90m	$739	$789
2-4GIG	ClubMac DAT/DC	DDS-DC	60m, 90m	$929	$979
4-8GIG	ClubMac DAT/2	DDS-2	60m, 90m, 120m	$1139	$1189
2.0GIG	HP DAT	DDS	60m, 90m	$939	$989
2-4GIG	HP DAT/DC	DDS-DC	60m, 90m	$1049	$1099
4-8GIG	HP DAT/2	DDS-2	60m, 90m, 120m	$1319	$1369
2.2GIG	EXB-8205S	8mm	112m	$1499	$1549
5.0GIG	EXB-8505S	8mm	112m	$2319	$2369

ClubMac DAT and DAT/DC drives include Retrospect v2.1 Backup Software, ONE 90 Meter Tape and a TWO Year Warranty. HP DAT drives carry a ONE Year Warranty
The ClubMac DAT/2 & HP DAT/2 drive includes Retrospect Remote v2.0 (3-Pack) Network Backup Software, ONE 120 Meter Tape and a ONE Year Warranty

ClubMac CD-ROM Reader



ClubMac 30 DAY MONEY BACK GUARANTEE

ClubMac 2X Speed CD-ROM Reader

- 320ms access time • Caddy-Less design
- Double Speed performance
- Headphone jack and RCA jacks
- PhotoCD compliant • No Caddy Needed

$199

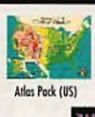
	w/o bundle	w/ClubMac CD bundle
ClubMac Dual Speed (External, 320ms access time)	$199	$299

The ClubMac CD-ROM reader carries a ONE Year Warranty

ClubMac CD-ROM Bundle


The Animals


Atlas Pack (World)


Atlas Pack (US)


Mayo Clinic


Toolworks Encyclopedia v6.0

LUCASFILM GAMES
Lucas Game Pak II

$800 VALUE


Quickshot Speakers

MacWorld September 1994

CLUBMAC IS NOW AN APPLE® AUTHORIZED CATALOG RESELLER!

Monitors, Graphic & Video Cards

radius

NEW



IntelliColor Display / 20e $1949

GRAPHIC CARDS

LeMansGT (0447)	$1835
PrecisionColor Pro 24X (0429)	$1319
PrecisionColor Pro 24XK (0430)	$679*
PrecisionColor Pro 24XP (0431)	$439
PrecisionColor 24X (0421)	$804†

MULTIMEDIA

VideoVision Studio (0418)	$3295
VideoVision Studio Upgrade (0419)	$1499
VideoVision Studio Basic (0416)	$1509

MONITORS

PrecisionColor/21 (0463)	$1989
IntelliColor Display/20e (0461)	$1949
PrecisionColor Display/20v (0427)	$1399
PrecisionColor Display/17 (0460)	$969**
Pivot Display (0361)	$565
Full Page Display/gs (0424)	$489
TPD20gs (0436)/21gs (0437)	$785/$969

* After MFR $50.00 rebate, † After MFR $75.00 rebate
** After MFR $100.00 rebate. Offers expire 08/31/94

Purchase one of the following



$1835

or



$1319

LeMansGT — PrecisionColor Pro 24X

Get a "FREE" CD-ROM READER a $469 value

NEC MultiSpin 3Xe



FREE

Offer ends 08/31/94



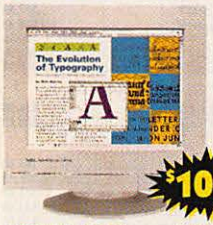
It's time to trade up for VideoVision Studio!

SAVE $500*

For a limited time, you can trade in your digital video board and get $500.00* from Radius when you purchase a VideoVision Studio video board.

* Offer good only with the purchase of a Radius VideoVision Studio. Mail qualifying video board, VideoVision Studio warranty registration card and a copy of your sales receipt to Radius. Offer ends 08/31/94

NEC



$1099

17" MultiSync 5FGp

MONITORS

15" MultiSync 2V (JC-1432VMA) up to 832 x 624	$335
15" MultiSync 3V (JC-1535VMA) up to 1024 x 768	$469
15" MultiSync 4FGe (JC-1531VMA-3) up to 1024 x 768	$629
17" MultiSync 5FGe (JC-1731VMA-3) up to 1024 x 768	$989
17" MultiSync 5FGp (JC-1741UMA-3) up to 1280 x 1024	$1099
21" MultiSync 6FGp (JC-2141UMA-3) up to 1280 x 1024	$1999

NEC Monitors carry a THREE Year Warranty.

PRINTERS

Silentwriter 640 6ppm, 300 dpi, 52 fonts, PS Level 2	$679*
Silentwriter 1097 10ppm, 600 dpi, 35 fonts PS Level 2	$1379

The Silentwriter 640 carries a Limited TWO-Year Overnight Replacement Warranty
The Silentwriter 1097 carries a ONE Year Warranty.
*After MFR $50.00 rebate. Offer ends 09/30/94

Printers

HEWLETT PACKARD Authorized Dealer

HP LaserJet 4ML Printer



$1029

- Fast Intel 80960 18.8 MHz RISC processor
- Auto-switching between PostScript and enhanced HP PCL 5
- 300-dpi w/ HP Resolution Enhancement
- 35 PostScript fonts • 4ppm • 4MB standard memory
- PostScript Level 2 • ONE Year Warranty

HP DeskWriter 310 Printer 300 x 300 dpi, 3ppm, Optional Color Kit Available	$309
HP DeskWriter 310 Printer with Cutsheet Feeder (60-sheet), Color Kit Available	$369
HP DeskWriter 520 Inkjet Printer 600 x 300 dpi, 3ppm, 35 fonts	$289
HP DeskWriter 550C Inkjet Printer 300 x 300 dpi color, 3ppm, 35 fonts	$479
HP DeskWriter 560C Inkjet Printer 600 x 300 dpi color, 3ppm, 35 fonts	$575
HP DeskJet 1200C/PS PostScript Printer 600 x 300 dpi, 6ppm	$2215
HP LaserJet 4ML Printer 300 x 300 dpi, 4ppm, 35 scalable fonts	$1029
HP LaserJet 4MP Printer 600 x 600 dpi, 4ppm, 35 scalable fonts	$1395

HP DeskWriter Inkjet Printers carry a THREE Year Warranty.
HP DeskWriter 310 Printers carry a ONE Year Warranty. HP LaserJet Printers carry a ONE Year Warranty.

Acceleration

TODAY — 3 Year Warranty — DAYSTAR DIGITAL

TURBO 040 ACCELERATORS

Turbo 040 (with FPU support)

33 MHz Turbo 040 w/128K cache (000773)	$789
40 MHz Turbo 040 w/128K cache (000797)	$955

Turbo 040i (w/o FPU support)

33 MHz Turbo 040i w/128K cache (000780)	$625
FastCache Turbo (000223)	$165

APPLICATION ACCELERATORS

Image 040 (Quadra/Centris) (000414)	$1539
Quad 040 w/128K cache (Quadra/Centris) (000056)	$955

POWERPC PRODUCTS

66 MHz PowerPro 601 (000728)	$1497
80 MHz PowerPro 601 (000735)	$1997
FastCache PowerPro-1MB Cache (000742)	$499

POWERCACHE

	without FPU / with FPU
33 MHz PowerCache (P31UV-033)	$275 / $357
50 MHz PowerCache (P31UV-050)	$415 / $537
PowerCache Adapter*	$99

* Not req'd for IIci, IIvi, IIvx, Performa 600

Networking

5 Year Warranty

ASANTÉ

10THUB/12	10BT Hub w/12 10T, Thk & Thn ports	$465	
10THUB/8	10BT Hub w/8 10T, Thn port	$229	
Mini EN/SC	Thn/10BT SCSI Ether w/DT& PB cable	$297	
Mini EN/SC10T	10T SCSI Ethernet w/DT & PB cable	$237	
NETEXT-FN	AAUI Hub w/4 RJ45 ports	$179	
FNTNA	10BT or Thin FriendlyNet Media Adapter	$65	
MC+IIE64	Mac II & Perf 600, Thk/Thn, 64K	$139	
MAC+IIET64	Mac II & Perf 600, Thk, 10BT, 64K	$139	
MC3NB	Mac II & Perf 600, Thk/Thn/10BT, 64K	$189	
AP1001	AsantéPrint, Thk/10BT or Thk/Thn	$329	

SUPERMAC™

ASK ABOUT SUPERCARE OVERNIGHT REPLACEMENT

When you purchase the following products...

$300 REBATE



$2099

SuperMatch 21•T XL

+

Thunder II GX• 1152



$2169

Bundle:

$2099 SuperMatch 21TXL
+ $2169 Thunder II GX•1152
$4268
- $300 SUPERMAC REBATE
$3968

Offer ends 10/31/94

24-BIT GRAPHIC ACCELERATORS

Thunder II GX•1600 1600 x 1200 CMYK acceleration	$3349
Thunder II GX•1360 1360 x 1024 CMYK acceleration	$2689
Thunder II GX•1152 1152 x 870 CMYK acceleration	$2169
Thunder/24 v.3.0 (G1130)	$1399
Spectrum Power • 1152 (G3430)	$1169
Spectrum/24 Series V (G3930)	$839

All SuperMac products carry the SuperCare Plus Warranty (Overnight replacement for ONE Year).
SuperMac graphic and digital video cards carry a FIVE Year Warranty.

LARGE SCREEN DISPLAYS

SuperMatch 21•T XL Trinitron (STD2102)	$2099
SuperMatch 20•T XL Trinitron (STD9752-XL)	$1949
SuperMatch 17XL (STD1701)	$999
Platinum 21 Two-Page GS (STD9761)	$999
PressView 21 Display System	$3349

MULTIMEDIA SOLUTIONS

Spigot II Tape (DV1530)	$849
Video Spigot NuBus (DV1030)	$369
Video Spigot NuBus LC (DV1050)	$249

Scanners

NEW PRICES

MICROTEK *Better Images Through Innovation.*

ScanMaker IIsPX



$899

ScanMaker IIG with Fractal Design Sketcher 1.0	$499
ScanMaker IIsp with Photoshop 2.5 LE	$789
ScanMaker IIsPX with full version of Photoshop 2.5	$899
ScanMaker IIHR with full version of Photoshop 2.5	$1089

EPSON

MacWORLD August 1993

*FREE ASTOUND 1.0 & $50 Rebate with the purchase of an EPSON ES800C

* Offer applies after Mail-in, MFG $50.00 Rebate Limited Time Offer!

ES-800C Pro Mac



$1199

ES-800C Pro-Mac Up to 1600dpi, PhotoShop 2.5, ScanTastic, KAI's PowerTools	$1199
ActionScanning-Mac Up to 1200dpi, PhotoShop 2.5 LE & ScanTastic	$799
Transparency Unit (BB13021)	$749

*With MFR $50 Rebate. Limited Time Offer!

Input Devices

WACOM UD Graphic Tablet



WACOM PRODUCTS

ARTZ 6x8 ADB Tablet	$299
UD 12x12 Standard Tablet	$499
SD 12x18 Electrostatic Tablet	$1029
SD 12x18 Standard Tablet	$959
SD 18x25 Standard Tablet	$2579

ClubMac Extended Keyboard

Includes a ONE Year Warranty

$69



Available in the following versions:
- English • Swiss
- Spanish • French • German

Modems

Supra Corporation

SupraFAXModem 28.8 MC



$279

SUPRA MODEMS

SupraFAXModem 14.4 LC V.32bis, V.42bis w/FAXstf	$139
SupraFAXModem 14.4 MC V.32bis, V.42bis w/FAXstf	$199
SupraFAXModem 14.4 PB V.32bis, V.42 for Pwbk	$219
SupraFAXModem 28.8 MC V.Fast Class	$279
SupraFAXModem 28.8 PB V.Fast Class	$319

GLOBAL VILLAGE COMMUNICATION

DUO & PB500 Series Mercury now available!



$279

Global Village Modems

PowerPort / TelePort

Mercury 19,200, V.32 Turbo	$319/$279
Gold 14,400 V.32 bis	$279/$225
Bronze/Bronze II 2400, 4800, 9600 Fax	$95/$95
OneWorld Fax Server 1 Line/AppleTalk	$839
OneWorld Fax Server 2 Line/10BT	$1259

CALL FOR FREE CATALOG

Warranties: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. Money Back Guarantee: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. Returns: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. All product information and prices are subject to change without notice. Not responsible for typographical errors.

No Surcharge!

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Authorized Catalog Reseller

ClubMac

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Fax (714)768-9354 • 7 Hammond, Irvine, CA 92718

MacWorld September 1994

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Great Deals!



$99.98

Performantz Upgradable 14.4 S/R Data Modem

- V.42 error correction/data compression
- Transfer rates of up to 38,400 bps
- 14,400 bps data speed
- Affordably priced

Performantz #96571

$469.98



Multiscan 15SF

- 15" monitor with .26mm dot pitch and five preset resolutions
- 1280x1024 at 60Hz maximum resolution
- Meets all monitor safety standards worldwide
- Energy Star and VESA compliant
- Two user-adjustable temperature presets for more accurate whites

Sony #01156

NEW! from Apple

$409.98



Apple External Hard Drive 230MB

- Front panel power-on switch and pilot LED
- Simple SCSI ID check or change under a front mounted pop-up panel
- Complete set of cables, operating software and terminator
- Cushioned foot pads protect the drive and your desk in a vertical or horizontal position
- Advanced 3-1/2" drive technology for fast data access

Apple Computer, Inc. #95347

Adobe

99251	Acrobat Exchange Single user	$121.88
06263	Dimensions 2.0	$118.98
99491	Illustrator V5.5	$371.88
05808	Adobe Illustrator 5.0-5.5 Upgrade	$89.98
04042	Photoshop V2.5.1	$544.98
04670	Premiere V4.0	$399.98
05702	Premiere v3.0 -4.0 Upgrade	$71.82
03971	Streamline V3.0	$124.38
06332	Super ATM	$92.98
99253	Type Basics	$116.98
03497	Type Manager V3.6	$37.50
03950	Adobe Type on Call	$61.88
98501	Aladdin SitCom	$61.36
05820	Aladdin Stuffit Space Saver	$30.66

Aldus

06711	DateBook Pro V4.0	$42.61
95314	Fetch V1.2 single user	$94.98
00333	FreeHand V4.0	$368.98
04121	Gallery Effects Vol. 1	$124.38
98047	HomePublisher v2.0	$43.61
05481	IntelliDraw V2.0	$40.98
04573	PageMaker V5.0	$546.98
00346	Persuasion V2.1	$309.38
04190	SuperPaint V3.5	$43.98
06712	TouchBase Pro V4.0	$42.61
94194	DateBook & TouchBase Pro 4.0 Comp Upgr	$46.98

Altsys

05036	EPS Exchange V2.0	$85.11
04537	Fontographer 4.0	$247.98
00349	Metamorphosis Pro	$84.66

Ares

99266	Font Chameleon V1.0	$171.98
00078	Fontmonger V1.5	$88.98
03552	Avery MacLabel Pro	$42.59

Broderbund

95461	Automap Atlas	$54.74
03970	Bannermania	$20.98
03513	Carmen Sandiego/Time	$28.95
99564	Carmen Sandiego/USA DLX	$38.47
05688	Carmen Sandiego/World DLX	$38.47
97732	Carmen Sandiego/World DLX CD-ROM	$53.00
02730	Might and Magic III	$34.84



MS FoxPro 2.5 #99696 ONLY! $84.98

Caere

05161	OmniPage Direct	$85.19
01005	OmniPage Pro V5.0	$465.97
99255	OmniScan	$292.05

Claris

04140	MacProject Pro V1.5	$362.98
03478	FileMaker Pro V2.1	$238.98
99734	Impact V1.0	$214.98
99733	ClarisWorks V2.1	$178.98
04073	MacDraw Pro V1.5	$230.98
02201	MacPaint V2.0	$76.03
05032	FileMaker Pro V2.1 Comp Upg	$99.98
99750	Power to Go v2.0	$37.98
06343	Brush Strokes	$36.98
06525	MacWrite Pro V1.5	$88.98
06304	Retrieve It!	$21.98

Connectix

06925	CPU Desktop Utilities	$54.40
04144	Maxima V2.0	$42.31
05646	PowerBook Utilities	$53.73
96785	RAM Doubler	$51.14
99127	Colorage Freedom of Press Classic	$79.36
00213	CompuServe Membership Kit	$22.10

Corel

95331	Corel GALLERY	$32.09
Call	Corel Professional Photo CD's - Call	$26.57
00203	Cricket Graph III	$85.23

Dantz

06326	Diskfit Direct V1.0	$27.27
04722	Diskfit Pro V1.1	$69.43
04194	Retrospect w/ Remote 10pk	$244.98
02586	Retrospect V2.0	$135.98

Datawatch

06533	Citadel W/Shredder	$53.55
06535	ScreenLink V2.0 Twin pack	$53.55
06534	Superset Utilities	$84.98
02077	Virex V5.0.3	$59.16

Delrina

97921	Delrina Fax Pro for Mac 1.5	$79.41
04706	Far Side Daily Planner	$37.22
17271	Intermission Screen Saver	$25.11
97938	Opus & Bill Screen Saver	$27.66

Deneba

99538	Artworks V1.0	$97.98
00803	Canvas V3.5	$251.98

Electronic Arts

97701	Chuck Yeager's Air Combat	$34.98
00473	Golf PGA Tour II	$34.98
97712	Populous	$28.98
97703	Total Distortion CD	$73.86
97707	Victory at Sea	$42.00

Entertainment

02785	After Dark V2.0	$25.80
06519	The Disney Screen Saver Collection	$25.80
04053	More After Dark vol 1	$21.27
05934	Star Trek Screen Saver	$27.50
95465	Comptons Movies CD	$25.31
03598	LucasArts Indiana Jones Last Crusade	$19.23
99583	Maxis A-Train w/Contruct Set	$26.14
98218	Maxis DoodleMation V1.0	$18.32
98221	Maxis El Fish	$32.98
00145	Maxis Robosport	$20.89
04721	Maxis SimAnt	$26.11
98222	Maxis SimCity 2000	$38.98
99216	Maxis SimCity Classic	$20.89
03800	Maxis SimEarth	$27.25
06848	Microprose Civilization	$42.61
97127	Paramount Jump Raven CD	$38.98
97146	Paramount Lunicus CD	$37.98
97144	Paramount Movie Select CD	$26.25
97145	Paramount Rock, Rap and Roll CD	$35.77
05518	Passport Music Time/Trax Bundle	$84.66
05264	Passport Trax	$215.91
06486	Psygnosis Lemmings	$32.14
99237	Psygnosis More Lemmings	$27.35
97197	Velocity Development Spectre VR	$32.81
94593	Velocity Development Spectre VR CD	$38.98
99236	Virgin 7th Guest CD	$47.93

Fractal Design

00665	Painter V2.0	$250.98
06957	PainterX2	$90.98
06157	Sketcher V1.0	$48.48

Frame Technology

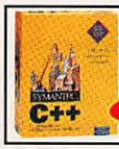
03582	FrameMaker 4	$558.98
98039	FrameViewer 4	$42.98
96800	Farallon Timbuktu Pro	$130.78
99506	Gryphon Morph V2.0	$131.82
06668	HSC Kai's Power Tools V2.0	$106.90

Inline

06015	Cog to V1.0	$30.98
97198	Deliverance	$25.55
97744	Firefall	$25.55
06060	Icon 7	$30.66
00638	INITpicker V3.0	$37.98
99200	Spin Doctor	$30.66
99227	Super Maze Wars	$33.22

Insignia

03664	Access PC 3.0	$79.55
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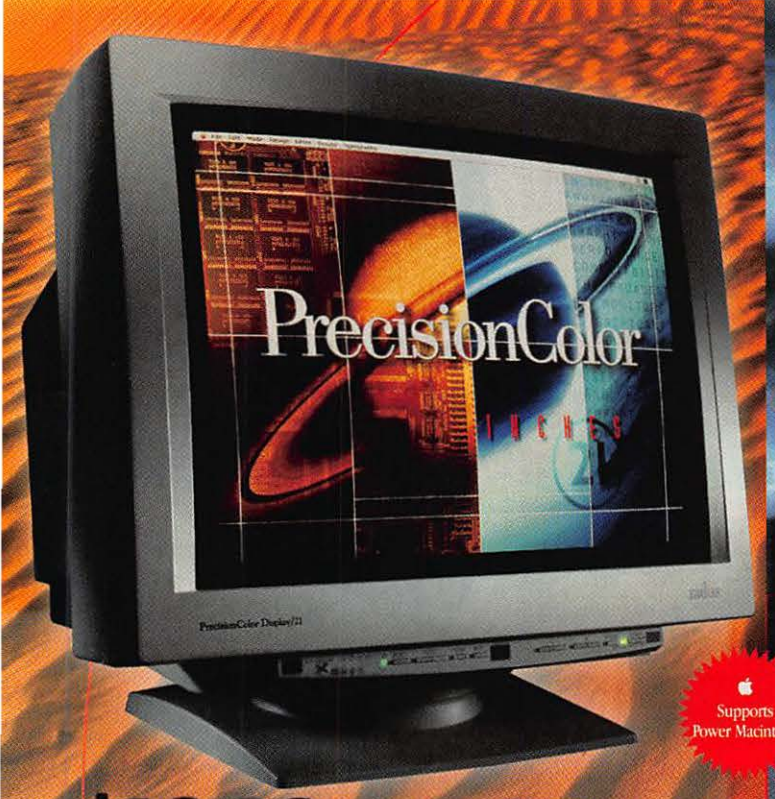
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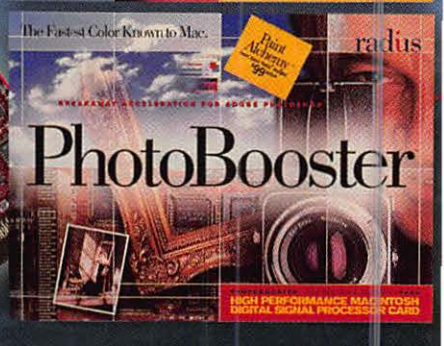


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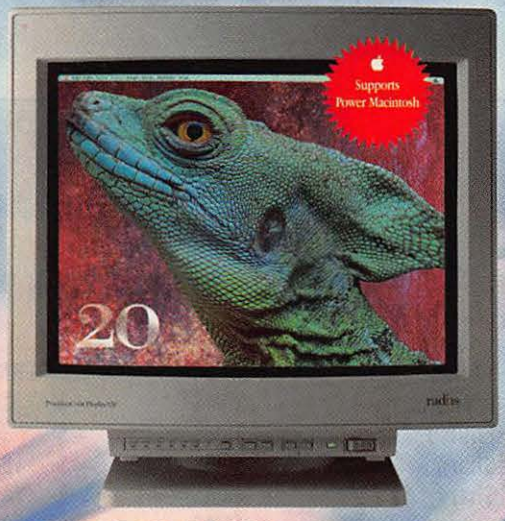


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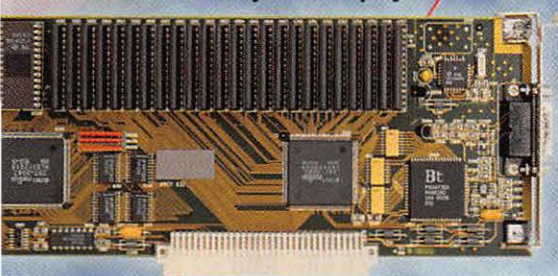
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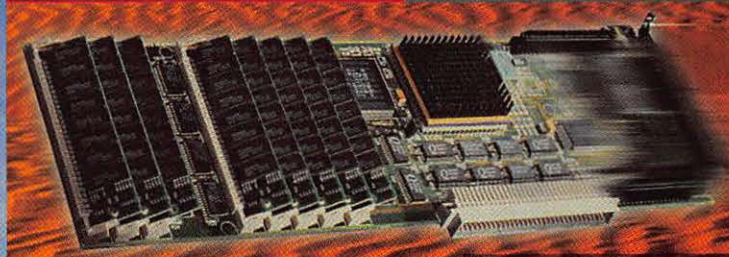


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2.5GIG	3.5"	8MS	Barracuda 2	$ 1640
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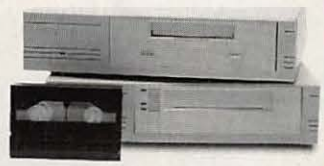
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4.0-8GIG	Connor 4326 DDS-2	4MM	$ 1089	$ 1149
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1.3-10GIG	Exabyte 8505	8MM	$ 2179	$ 2279
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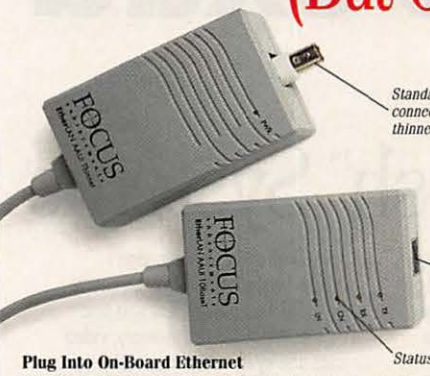


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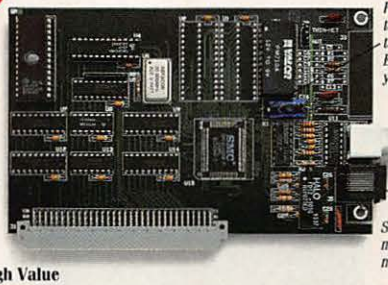
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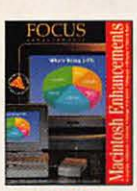
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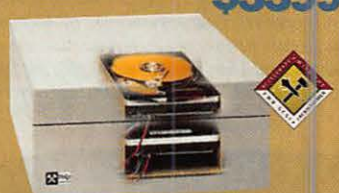
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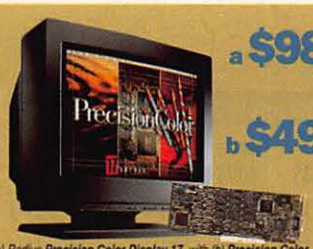
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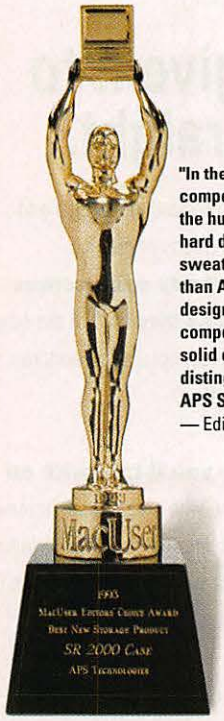
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APS 340[2] 340 mechanism	327MB	279	379
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APS Q 525[2] Quantum 525 mechanism	516MB	379	479
APS I mr 540[2] IBM DSAS 3540 mechanism	522MB	399	499
APS Q 540[2] Quantum 540 mechanism	516MB	399	499
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APS MS 4110[5] Micropolis 2210 mechanism	1002MB	699	799
APS Q 1080[2] Quantum 1080S mechanism	1029MB	749	849
APS MS 1.7AV[5] Micropolis 2217AV mechanism	1612MB	999	1099
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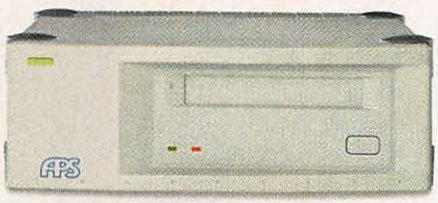
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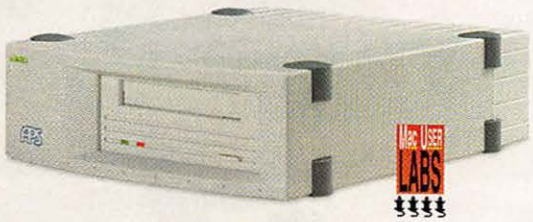
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DAT			
Model	**Capacity***	**Internal**	**SR 2000**
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APS Turbo DAT[2]	4-5G on 90m tape	949	999
APS HyperDAT[1]	8-10G on 120m tape	1149	1199

*Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.

DAT Media (Units)	*1-4*	*5-19*	*20+*
60 meter DAT Tapes —	*$10*	*$9.50*	*$8.50*
90 meter DAT Tapes —	*12*	*11.50*	*10.50*
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All MO Drives Include 1 FREE Cartridge

MO Media (unformatted)	*1-4*	*5-19*	*20+*
128MB cartridge —	*$46*	*$45*	*$44*
230MB cartridge —	*60*	*59*	*57*
1.3Gig cartridge —	*110*	*109*	*107 (1024KB/s)*

SYQUEST

APS SQ 555[2]	44MB	$259
APS SQ 5110c[2]	44/88MB†	429
APS SQ 3105[1]	105MB	329
APS SQ 3270[1]	270MB	539

† Does not format 44MB cartridges
All SyQuest Drives Include 1 FREE Cartridge

SyQuest Media	*1-4*	*5-19*	*20+*
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88MB cartridge —	*79*	*77*	*76*
200MB cartridge —	*89*	*87*	*86*
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Prices listed are for unformatted media.

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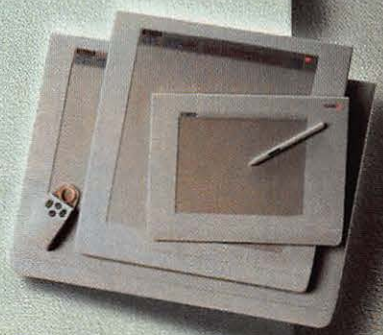
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CAPACITY	Access	RPM	Cache	Int	Ext
170 MB	11 ms	4500	128K	195	255
270 MB	11 ms	4500	128K	255	315
340 MB	11 ms	3600	128K	275	335
540 MB	12 ms	4500	128K	395	455

LPS drives come with a 2 year factory warranty and are SCSI 1 & 2 compatible. All drives are tested and formatted with the latest SCSI manager 4.3 compatible software which is 100% PowerMac Compatible. LPS series drives have a 2 year warranty. External drives come complete with external termination and your choice of a double

GO Power Book Drives

Capacity	Seek	Int.	Ext.
80 MB	17ms	185	255
256 MB	17ms	335	415

Empire and Pro Series

Capacity	Seek	RPM	Disc Cache	Int	Ext
540 MB	9.5 ms	5400	512K	$545	605
700 MB	10 ms	4500	512K	475	535
1080 MB	10ms	5400	512K	725	785
1440 MB	9.5 ms	5400	512K	905	965
1800 MB	10 ms	4500	512K	995	1055
2100 MB	9.5 ms	5400	512K	1235	1295

Pro & Empire drives have a 5 year factory warranty and are SCSI 1 & 2 compatible.

Seagate

Capacity	Model	Size	Access	RPM	Disc Cache	Int	Ext
1.2 GB	ST31200N	3.5	10ms	5400	256K	$735	$795
1.9 GB	Barracuda 1	3.5"	8ms	7200	1024K	1485	1545
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9 GB Elite 9	ST 410800N	5.25"	11ms	5400	512K	Call	Call

All Seagate drives listed a have a 5 year factory warranty. External drives come with your choice of a double shielded system cable or a daisy chain 50/50 cable as well as external termination. All drives come formatted and tested for a true plug and play solution. Please call our technical sales consultant for additional specifications, compatibility questions or a written quote.

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Capacity	Size	Model	Access	RPM	Cache	Int.	Ext.
1.2 GB	3.5" Low Profile	M4110	8 MS	5400	512K	$690	$765
1.2 GB	3.5"	M2210	10 MS	5400	512K	690	765
1.7 GB	3.5"	M2217	10 MS	5400	512K	920	995
2.4 GB	5.25"	M1926	11 MS	5400	256K	1340	1460
3.6 GB	5.25"	M1936	11 MS	5400	256K	1990	2110
		Direct to Disk Recording AV Drives					
1.2 GB	3.5"	M2210AV	10 MS	5400	512K	745	820
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3.6 GB	5.25"	M1936AV	11MS	5400	512K	2060	2180

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Capacity	Model	Access	RPM	Disc Buffer	Int	Ext
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520 MB	M2624 F/A	9ms	4500	512K	$545	$605
1.2 GB	M2694ESA	8.5 ms	5400	512K	$775	$835

DynaMO 128 — 230 MB — 30 ms, 3600 RPM, SCSI-2 — $965

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Capacity	Model	Access	RPM	Warranty	Int.	Ext.
1.2 GB	C2247	9.5 ms	5400	5 Year	$845	$905
New Price! 2.4 GB	C2490	8.5 ms	6400	5 Year	1495	1565
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Model	Price
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PS 1725 17PPM, 600 DPI, *New Price !	$4399
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*Network interfaces available for Ethernet/Talk,Token Ring for Netware,TCP/IP, DECnet, Emulation for DEC LN03, CCITT Group IV.

SyQuest

Capacity	Model	Seek	RPM	Buffer	Int	Ext
44MB	SQ555	20ms	3200	8K	249	309
88 MB	SQ5110C	20ms	3200	32K	375	405
105 MB	SQ3105	14.5ms	3600	64K	315	329
200 MB	SQ5200	18 ms	3200	64K	500	550
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Removable Media		Price
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105 MB	SQ310	58
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16x8x80 (FX)	Call	VRAM	
All memory has a lifetime warranty!		Video RAM 256K/512K	Call

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Capacity	Model	Media	Int.	Ext.
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3-5 GB	HP35480A	4mm	1105	1150
4-10 GB	HP1533A	4mm	1315	1365
20-50 GB	HP1553A & Auto Tape Loader		3495	3595
2-5 GB	Exabyte 8205	8mm	1485	1535
5-10 GB	Exabyte 8505	8mm	2175	2275
20-50 GB	Exabyte 10i Auto Tape Loader		CALL!	CALL!

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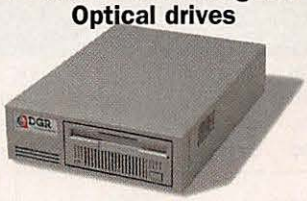
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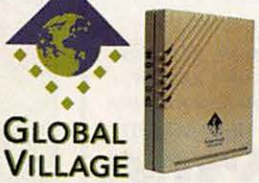


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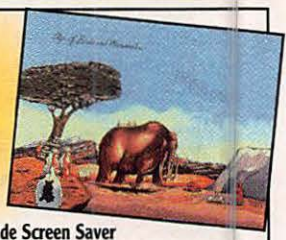
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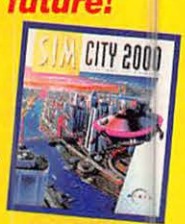
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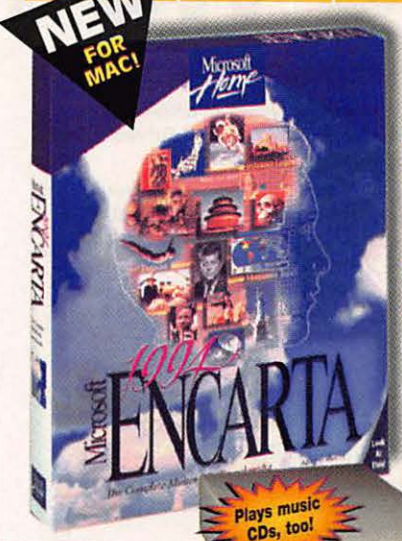
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240MB	14ms	4500	256K	Fujitsu	1 Year	$309 (2.5" for Powerbook)	
530MB	13.8ms	4500	256K	Fujitsu	5 Years	$375	$435
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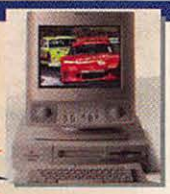
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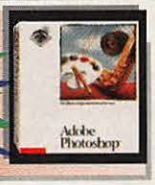
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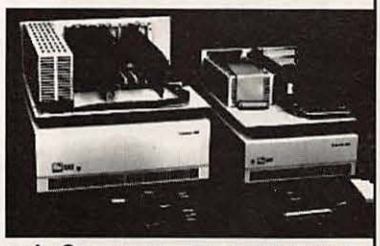
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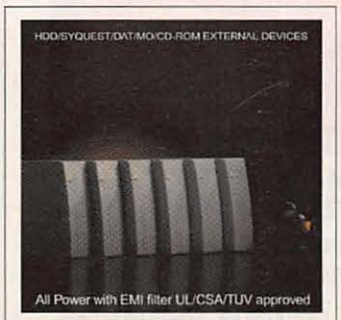
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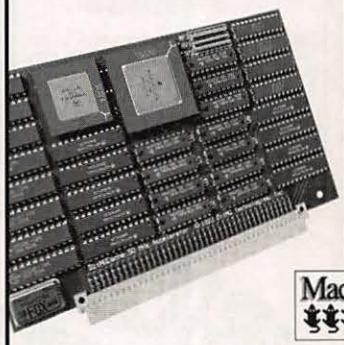
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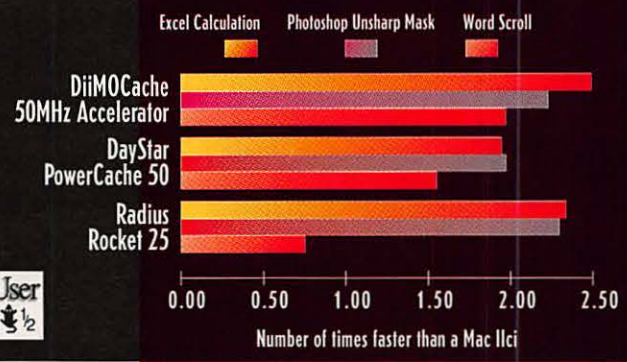
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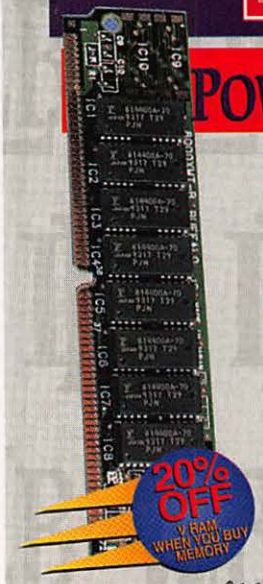
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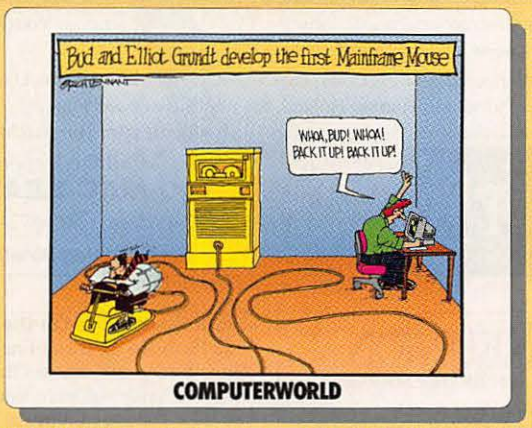
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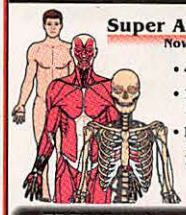
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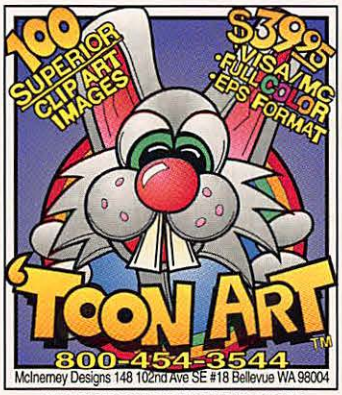

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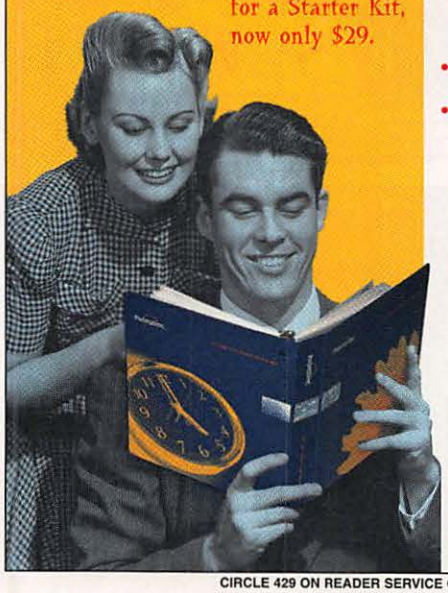
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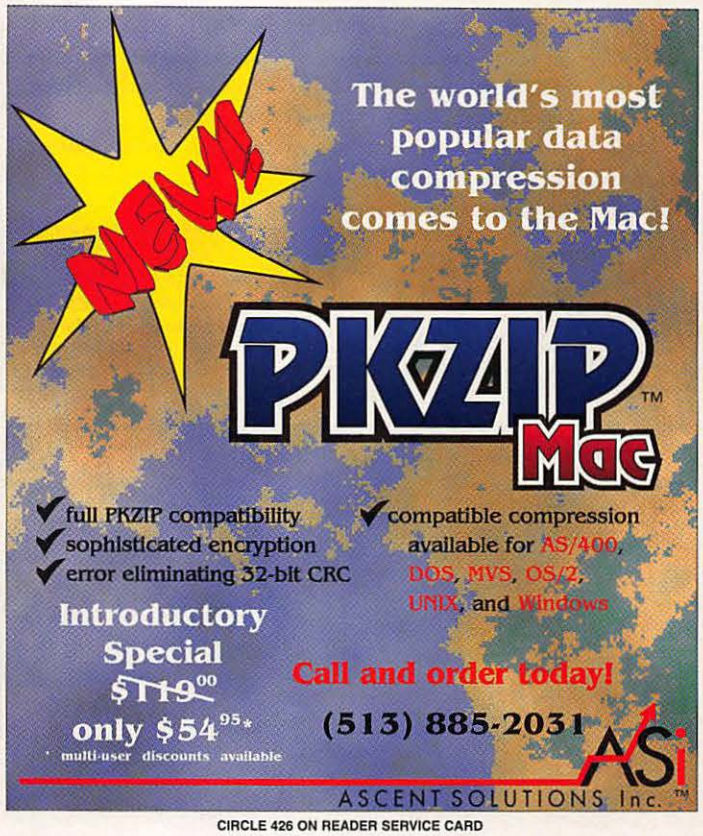
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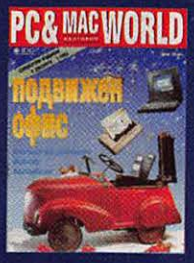
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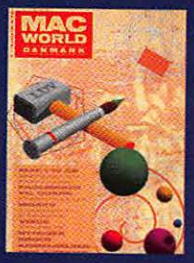
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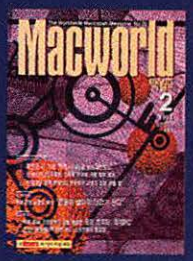
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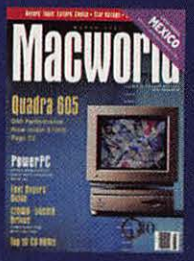
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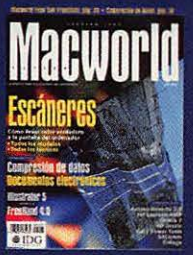
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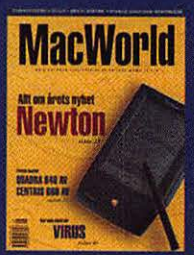
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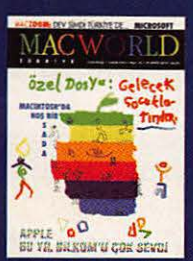
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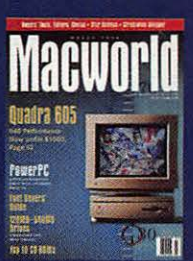
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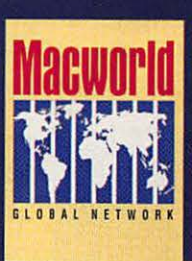
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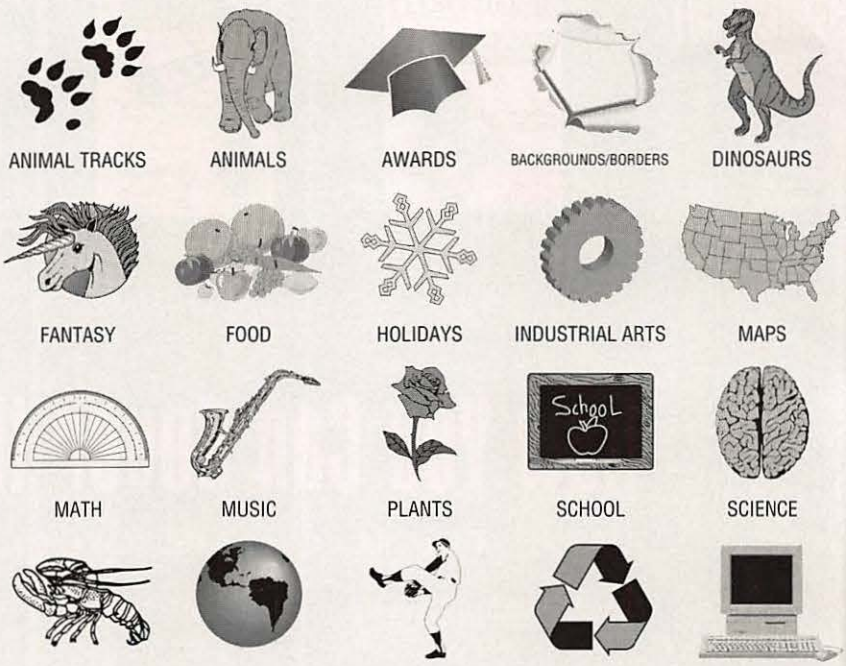
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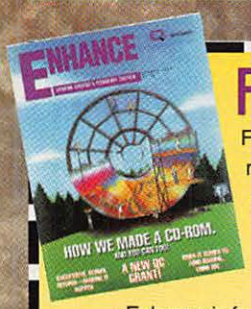
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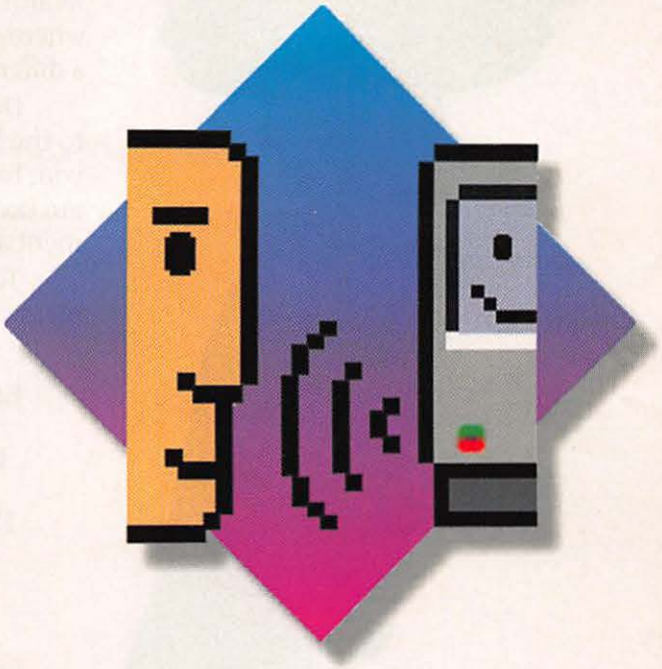
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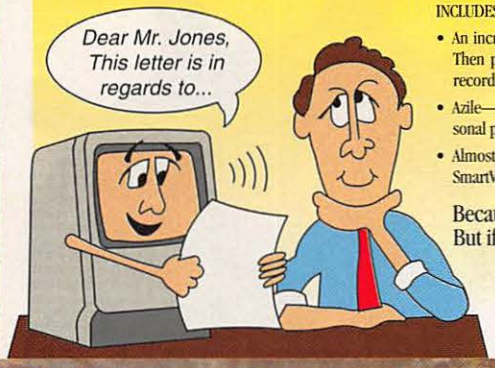
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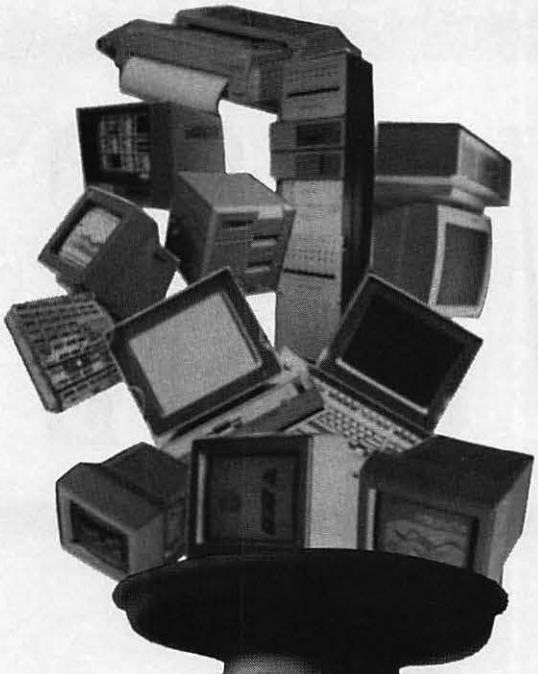
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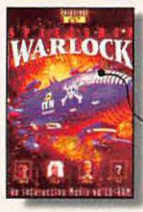


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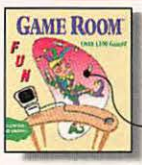
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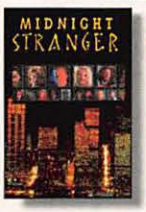
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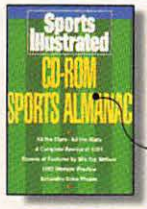
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BY GUY KAWASAKI

Doing Hollywood

Finally, a reason to get on the information superhighway

AT LAST, I'VE FOUND SOMEthing good about the information superhighway (aside from providing computer columnists with topics to write about): it's a wonderful opportunity for Macintosh multimedia mavens to make money off Hollywood. Hollywood's got content, but they need you to make it a digital reality. The biggest barrier to closing a deal with these folks, though, is understanding their culture and values (I use the terms *culture* and *values* loosely).

They are not like us; they're not fascinated with how the polar bears in the Coke commercial were animated. They are more interested in who Michael Ovitz just signed as a client, or whether Roseanne and Tom are staying together.

So sign off from America Online, put down your copy of *Zen and the Art of Resource Editing*, turn off Don Crabb's Macintosh television show, and give this column your full attention. I'm going to give you a five-minute lesson in doing business with Hollywood.

You Are What You Ride

First off, hire a limo. For one thing, in Hollywood even the pets of stars have limos. For another, your rental car will be robbed. On my last trip to Hollywood, my rental car was broken into twice in three days. Try getting a limo with a gold-plated hood ornament; chrome wheels; and a television, bar, and cellular phone in the back. Custom license plates like 2BASTAR or MOGUL 1 are a nice touch.

Stay at the Shangri-la Hotel. Staying at a national chain like Hilton, Sheraton, or Hyatt is passé. The Shangri-la is clean, reasonably priced, and hip enough to show what you know. Your host may even be able to drop you off on the way back to his or her house in Malibu. (If you stay at the Shangri-la, leave your PowerBook at home; the hotel's phone system doesn't like modems.)

Bring a cellular phone. You don't have to use it; just carry it with you. Unlike limos, the smaller the phone, the better. Try to arrange for "crisis" calls while you're in meetings. When the phone rings, listen for a bit and say, "Throw the Sculley message away. I'll call William Morris back tomorrow. Call Gates at home and tell him breakfast at my place is fine. Tell Diller he can afford to buy an evaluation copy."

Dress to Excess

Design a new business card. (Finally—a document that a 4MB Macintosh can handle.) Make sure there's a cellular phone number on the card. If you don't have one, fake it. No one is going to call you anyway. And if they do, hearing the recording "The CellularOne customer you have called is unavailable or has traveled outside the coverage area" will reassure the Hollywood mogul that you're busy cutting deals around the country.



JAMES YANG

Also, have your information printed in Japanese on the reverse side—intimating that you do business regularly in Japan. It can cost hundreds of dollars to get the information translated and typeset, so just copy random characters from your favorite Japanese restaurant's menu if you have to. If someone calls you "Mr. Ahi Belly," though, you're in trouble.

Dress up. Wear only clothes from companies whose names end in vowels. (The proper name for my favorite jeans manufacturer is Levi-Strauss, not Levi, so 501s don't cut it.) Be sure to properly accessorize. Rent a Rolex President for the trip if you don't have a convincing knockoff. A Range Rover lapel pin and a dress shirt with French cuffs and Ferrari-logo cuff links would help, too.

Hollywood Business Etiquette

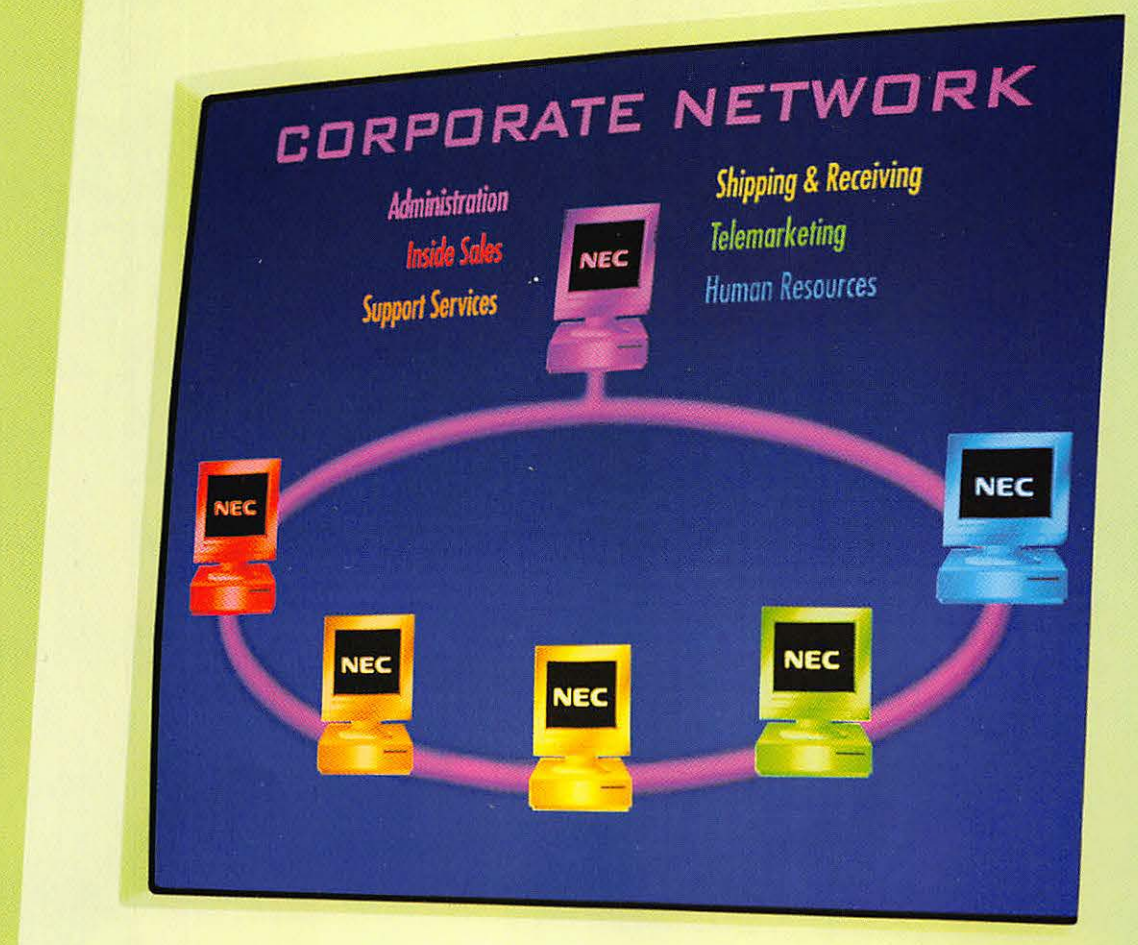
Pay attention to people's titles. It doesn't matter how ignorant a president, vice president, or director sounds—these are the clowns that sign the checks and pose for the pictures. It doesn't matter whether their technical people (if they have any) like your product, because they won't be asked. Find the person who looks like he or she has been surgically morphed the most times. There's the power.

Talk about golf, Tony Robbins, and Viacom. (If you're with women, substitute Marianne Williamson for Tony Robbins.) This sentence will cover everything: "I was trying out my new Pings at Pebble Beach with a buddy who had just heard Tony Robbins speak, and he told me that Viacom is the only thing that can stop the Japanese from buying up all of Hollywood." You don't have to understand any of this. Just do it.

When in Rome

One final suggestion—be greedy. There are two reasons: first, whomever you're dealing with will be; and second, Hollywood may have distribution and marketing, but you have technology. Let's face it, their idea of a user interface is VCR Plus. You can get distribution and marketing in New York or Tokyo. They can get technology only from you. **m**

GUY KAWASAKI's views are his own and only sporadically represent those of *Macworld*. His latest book is *Hindsights* (Beyond Words Publishing, 1994). He has investments in Bit Jugglers, Global Village Communication, Bookmaker Corporation, and others. He can be reached at Kawasaki@radiomail.net.



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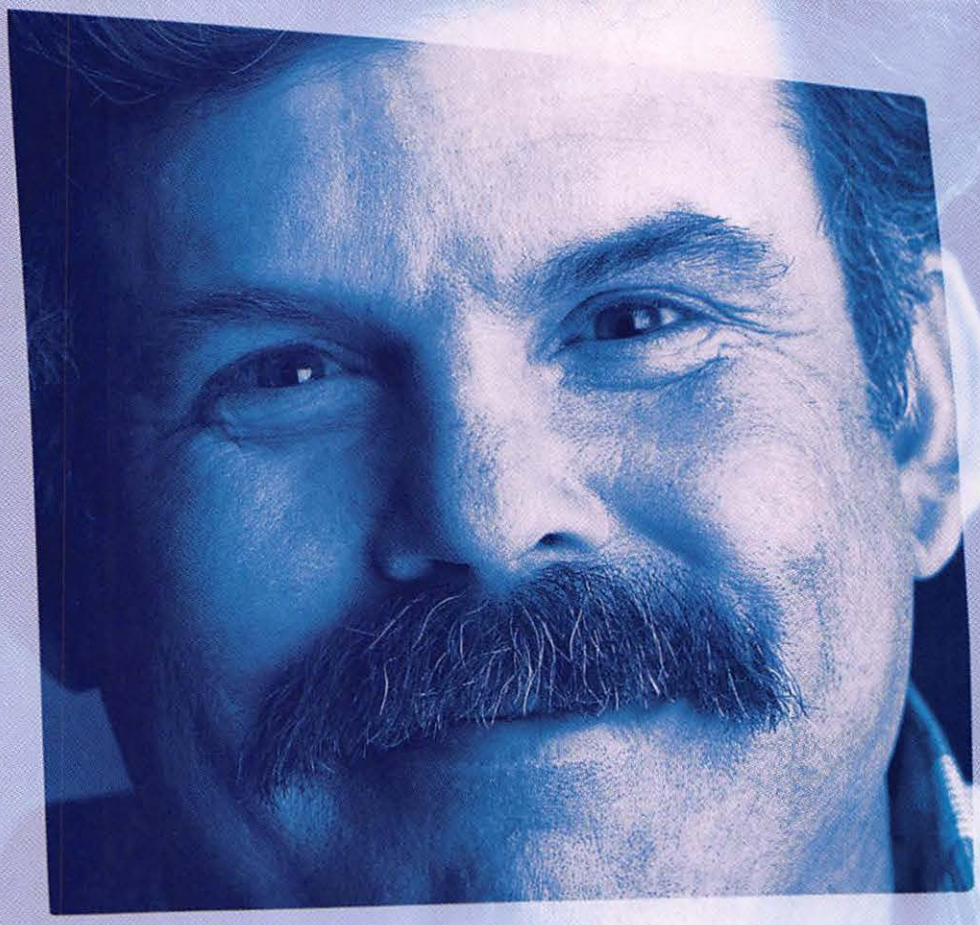
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